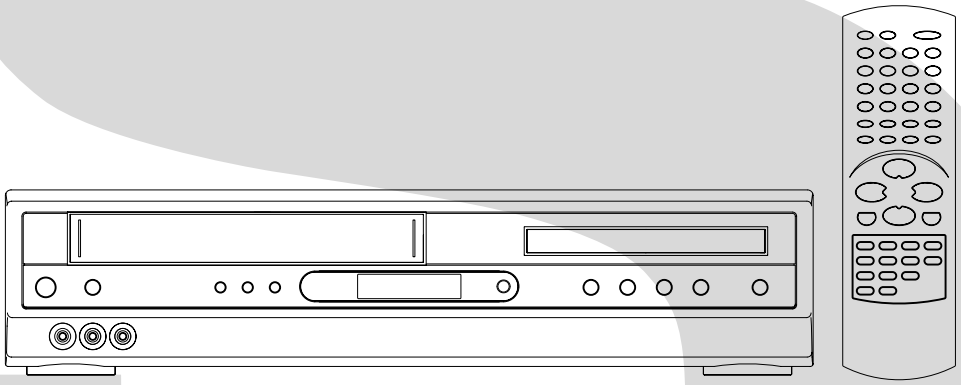
TOSHIBA

FILE NO. 810-200318

SERVICE MANUAL

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-K220U



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TOSHIBA

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DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-K220S

OWNER'S MANUAL

VHS Hi-Fi SQPB

©2003 Toshiba Corporation
This device does not tape-record copy protected DVD Video Discs.

TOSHIBA

J2C51601A
03/06 U
Printed in Thailand

IMPORTANT SAFEGUARDS

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this appliance to rain or moisture.**

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the partly responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

CAUTION: THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

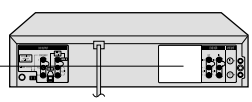
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS USER'S GUIDE CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.

CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.



IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning the exterior cabinet only.
6. **ATTACHMENTS**
   The manufacturer of this unit does not make any recommendations for attachments, as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and/or the manufacturer's instructions have been adhered to.
10. **POWER SOURCE**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Instead of the polarized alternating-current line plug, your unit may be equipped with a 3-wire grounding-type plug (a plug having a third (grounding) pin). This plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

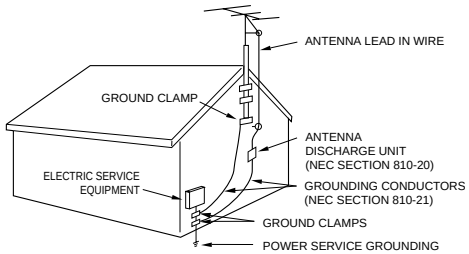
IMPORTANT SAFEGUARDS

13. **LIGHTNING**
To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall onto or against such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
17. **OUTDOOR ANTENNA GROUNDING**
If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
18. **SERVICING**
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
For example:
a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f . When the unit exhibits a distinct change in performance, this indicates a need for service.
19. **REPLACEMENT PARTS**
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock or other hazards.
20. **SAFETY CHECK**
Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
21. **HEAT**
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
22. **DISC TRAY**
Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.
23. **CONNECTING**
When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

IMPORTANT SAFEGUARDS / Power source

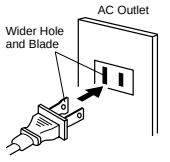
24. **LASER BEAM**
Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.
25. **DISC**
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.
26. **NOTE TO CATV SYSTEM INSTALLER**
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)

NEC-NATIONAL ELECTRICAL CODE
S2898A

Power source



Polarized AC Cord Plug
(One blade is wider than the other.)

TO USE AC POWER SOURCE
Use the AC polarized line cord provided for operation on AC. Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.

Notes:
- Never connect the AC line cord plug to other than the specified voltage (120V 60Hz). Use the attached power cord only.
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

Precautions

Notes on handling

- When shipping the DVD/VCR, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD/VCR. Do not leave rubber or plastic products to contact the DVD/VCR for a prolonged period. They will leave marks on the finish.
- The top and rear panels of the DVD/VCR may become warm after a long period of use. This is not a malfunction.
- When the DVD/VCR is not in use, be sure to remove the disc and the video cassette turn off the power.
- If you do not use the DVD/VCR for a long period, the unit may not function properly in the future. Turn on and use the DVD/VCR occasionally.

Notes on locating

- Place the DVD/VCR on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc or the video tape may become dis-aligned and damage the DVD/VCR.
- When you place this DVD/VCR near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD/VCR away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.
- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD/VCR.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

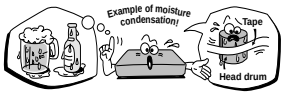
To obtain a clear picture

The DVD/VCR is a high technology, precision device. If the video head, the head drum, the optical pick-up lens or disc drive parts are dirty or worn down, the picture quality will deteriorate. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

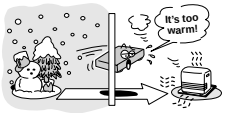
Notes on moisture condensation

Moisture condensation damages the DVD/VCR. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the head drum or the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD/VCR.

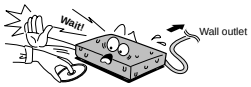


■ **Moisture condensation occurs during the following cases.**
- When you bring the DVD/VCR directly from a cold place to a warm place.
- When you use the DVD/VCR in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD/VCR in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD/VCR in a humid place.



■ **Do not use the DVD/VCR when moisture condensation may occur.**

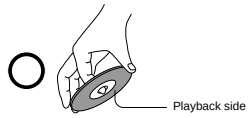
If you use the DVD/VCR in such a situation, it may damage discs and internal parts. Remove the disc or the video tape, connect the power cord of the DVD/VCR to the wall outlet, turn on the DVD/VCR, and leave it for two or three hours. After two or three hours, the DVD/VCR will have warmed up and evaporated any moisture. Keep the DVD/VCR connected to the wall outlet and moisture condensation will seldom occur.



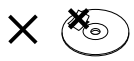
Notes on discs

On handling discs

- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.



On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.

- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

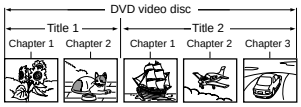
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

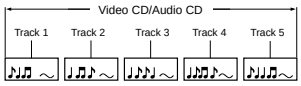
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



Video CD/Audio CD



Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

This device does not tape-record copy protected DVD Video Discs.
The device is not to be used for copying copyrighted content without the express written permission of the copyright owner.
Obtaining such permission is the sole responsibility of the user.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD/VCR. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD/VCR may not respond to all operating commands. This is not a defect in the DVD/VCR. Refer to instruction notes of discs.

"✋" may appear on the TV screen during operation. A "✋" means that the operation is not permitted by the DVD/VCR or the disc.
For example, sometimes it is unable to stop the playback of copyright message of the disc when the STOP (■) button is pressed. Alternatively, the "✋" may also indicate that the feature is not available for the disc.

Notes on region numbers

The region number of this DVD/VCR is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find (ALL) or (1), disc playback will not be allowed by the player. (In this case, the DVD/VCR will display a message on-screen.)

On Video CDs

This DVD/VCR supports Video CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **Video CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD/VCR in the same way as an audio CD.
- **Video CD equipped with PBC function (Version 2.0)**
  In addition to operation of a Video CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD/VCR can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
			8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
Video CDs	COMPACT disc DIGITAL VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes
CD-R/ CD-RW	COMPACT disc Recordable / COMPACT disc ReWritable	CD-DA/ JPEG/ MP3/WMA file	12 cm	Depending on the recording conditions
			8 cm	

- This unit can play back FUJICOLOR CD and Kodak Picture CD formats.
- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-RW, Photo CD, etc., or non standardized discs even if they may be labeled as above.
- Some CD-R/RWs can not be played back depending on the recording conditions.
- This DVD/VCR uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

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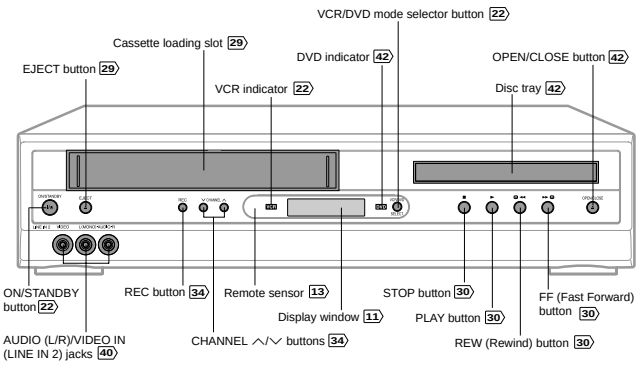
Identification of controls

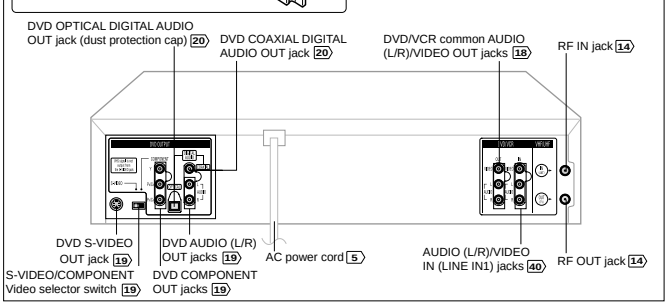
See the page in ▭ for details.

Front panel



Rear panel

When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.


DVD OPTICAL DIGITAL AUDIO OUT jack (dust protection cap) 20
DVD COAXIAL DIGITAL AUDIO OUT jack 20
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RF IN jack 14
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DVD AUDIO (L/R) OUT jacks 19
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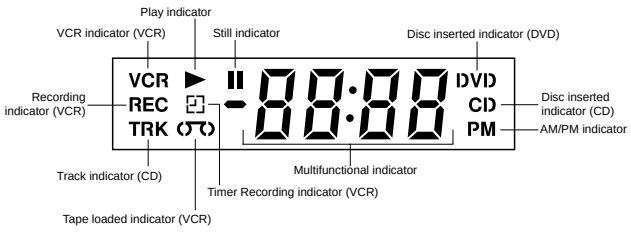
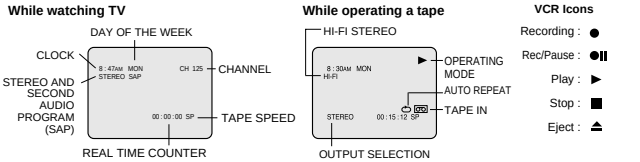
AUDIO (L/R)/VIDEO IN (LINE IN1) jacks 40
RF OUT jack 14
S-VIDEO/COMPONENT Video selector switch 19
DVD COMPONENT OUT jacks 19

Display window



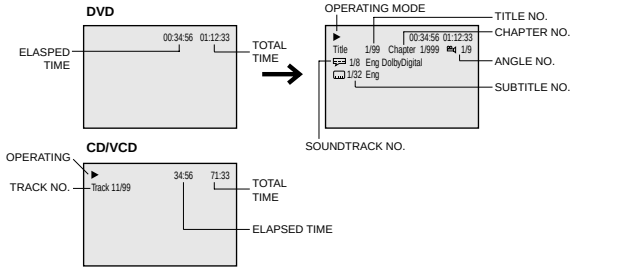
VCR operation status

Press **CALL** to display information on screen.
To cancel the display, press **CALL** again.



DVD/CD/VCD operation status

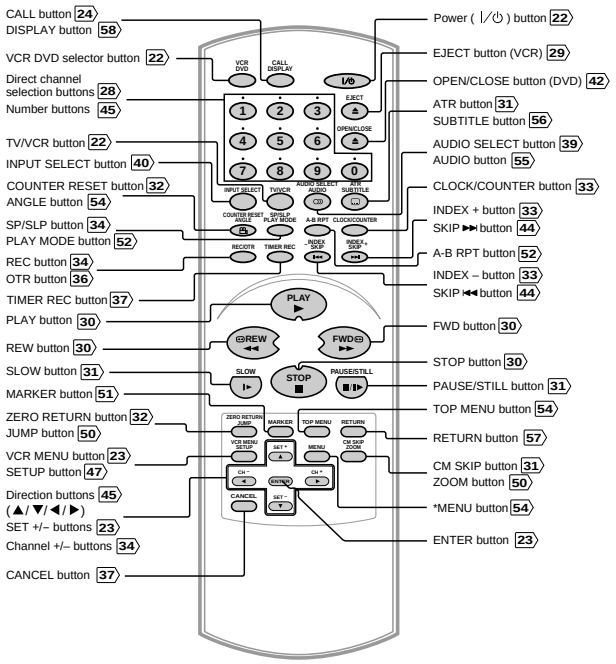
Each press of **DISPLAY**, the status display of the disc will appear on the screen and change as follows.



Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ☐ for details.

Remote control



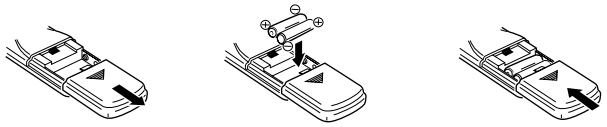
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "DVD Menu." 54

Inserting Batteries

1 Slide the battery compartment cover in the direction of the arrow.

2 Install two "AAA" batteries (supplied), paying attention to the polarity diagram in the battery compartment.

3 Replace the compartment cover.



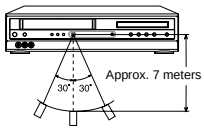
Battery precautions

The precautions below should be followed when using batteries in this device:
1. Use only the size and type of batteries specified.
2. Be sure to follow the correct polarity when installing the batteries as indicated in the battery compartment. Reversed batteries may cause damage to the device. To avoid a potential short circuit, insert the "–" end first.
3. Do not mix different types of batteries together (e.g. Alkaline and Carbon-zinc) or old batteries with fresh ones.
4. If the device is not to be used for a long period of time, remove the batteries to prevent damage or injury from possible battery leakage.
5. Do not try to recharge batteries not intended to be recharged; they can overheat and rupture. (Follow battery manufacturer's directions.)

Remote control basics

- Press **POWER (I/⏻)** to turn the DVD VCR on or off.
- Select your desired operating mode (DVD or VCR) using **VCR DVD**. (DVD or VCR indicator on the front panel will show you which mode is selected.)
- Press **CH +** or **CH –** to move through the channels one channel at a time.
- The **CH +/– (◀/▶)** and **SET +/– (▲/▼)** are also used to navigate on-screen menu system.
- You can directly access specific channels using **Number buttons**.
- Each press of **VCR DVD** on the remote control, switches the screen between the VCR screen (VCR mode) and the DVD screen (DVD mode).

Operation
- Aim the remote control at the remote sensor and press control buttons to operate.
- Operate the remote control within 30° angle on either side of the remote sensor, up to a distance of Approx. 7 meters.



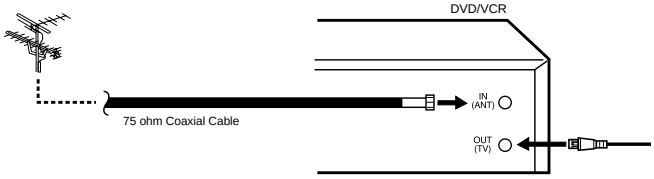
Antenna connections

If you are using an antenna system, follow these instructions. If you are a cable (CATV) subscriber, skip ahead to page 16 for the proper connections.

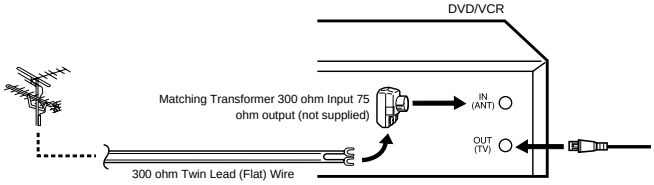
Antenna to DVD/VCR connection

The DVD/VCR must be connected "between" the antenna and the TV. First, disconnect the antenna from the TV and connect it to the DVD/VCR. Then connect the DVD/VCR to the TV. Below are 3 common methods of connecting an antenna system to a DVD/VCR. Find the type of antenna system you are using and follow the connection diagram.

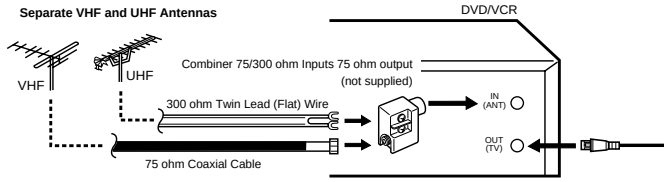
1 **Combination VHF/UHF Antenna with 75 ohm Coaxial Cable**



2 **Combination VHF/UHF Antenna with 300 ohm Twin Lead (Flat) Wire**



3 **Separate VHF and UHF Antennas**



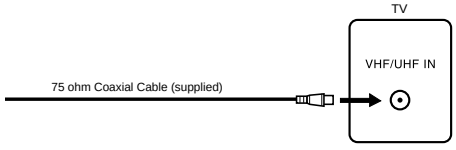
Note: If both VHF and UHF antennas have 300 ohm twin lead (flat) wires, use a combiner having two 300 ohm inputs and one 75 ohm output.

Notes:
- A clear picture will not be obtained by the DVD/VCR unless the antenna signal is good. Connect the antenna to the DVD/VCR properly.
- For better quality recording, an indoor antenna or a telescopic antenna is not recommended. The use of an outdoor type antenna is required.
- If you are not sure about the connection, please refer to qualified service personnel.

DVD/VCR to TV connection

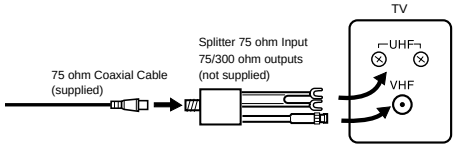
After you have connected the antenna to the DVD/VCR, you must connect the DVD/VCR to the TV.
Below are 3 common methods of connecting your DVD/VCR to a TV. Find the type of TV you are using and follow the connection diagram.

This DVD/VCR has a single 75 ohm output for connection to a TV. If your TV has separate VHF and UHF antenna inputs (numbers 2 and 3 below), use a splitter to connect the DVD/VCR to the TV for VHF and UHF reception.



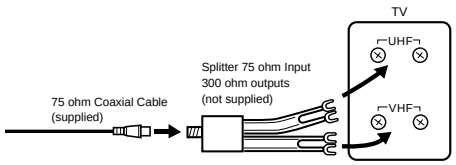
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with single 75 ohm VHF/UHF antenna input



Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 75 ohm VHF antenna inputs



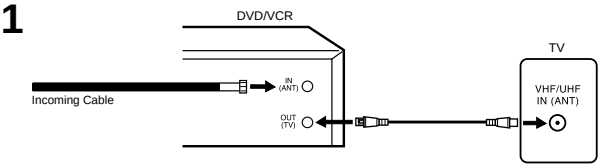
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 300 ohm VHF antenna inputs

CATV (CABLE TV) connections

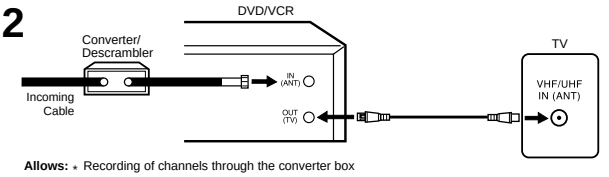
Many cable companies offer services permitting reception of extra channels including pay or subscription channels. This DVD/VCR has an extended tuning range and can be tuned to most cable channels without using a cable company supplied converter box, except for those premium channels which are intentionally scrambled. If you subscribe to a premium channel which is scrambled, you must have a descrambler box for proper reception.

1



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording of one channel while watching another.

2

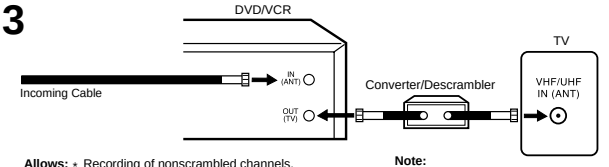


Allows:
- Recording of channels through the converter box (scrambled and unscrambled).
- Using the programmable timer to record only the channel selected at the converter box.

Prevents:
- Recording one channel while watching another.
- Using the DVD/VCR tuner to select channels.

Note:
To record from converter/descrambler, DVD/VCR tuner must be tuned to the converter output channel, usually channel 3 or 4.

3



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording an unscrambled channel while watching any channel selected at the converter box.

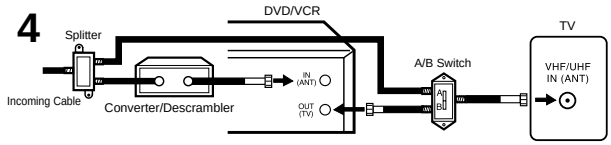
Prevents: Recording scrambled channels.

Note:
If you are playing a tape or using the tuner built into the DVD/VCR, the converter must be set to the video channel output of the DVD/VCR (either 3 or 4).

Note: Whenever a Converter/Descrambler box is placed before the DVD/VCR, you must tune the DVD/VCR to the output of the Converter/Descrambler box, usually channel 3 or 4.

IMPORTANT: Make sure the TV/CATV menu option is set to the "CATV" mode.
This DVD/VCR cannot receive scrambled programs since it does not contain a descrambler. In order to receive scrambled programs, your existing descrambler must be used. Descrambler boxes are available from cable companies. Consult your local cable company for more information concerning connection to their descrambler equipment. There are many ways to connect your DVD/VCR to a cable system. Below are six common methods of connection.

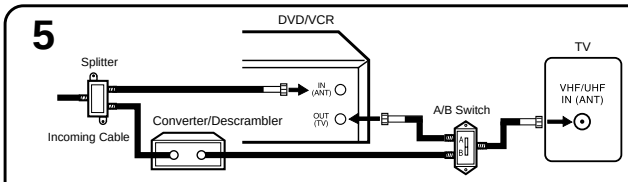
4



Allows:
- Recording of one channel while watching another.
- Using the programmable timer to record only the channel selected at the converter box.
- Recording of all channels through the converter box.

Prevents:
- Watching scrambled channels while recording another channel.
- Using the DVD/VCR tuner to select channels.

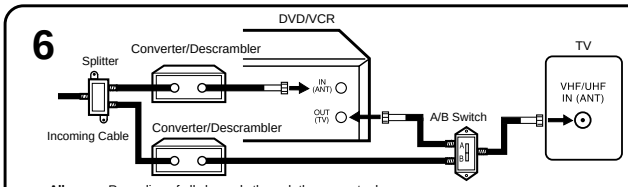
5



Allows:
- Recording of nonscrambled channels.
- Recording of one channel while watching another.
- Watching premium channels through the converter while recording nonscrambled channels.
- Using the programmable timer.

Prevents: Recording scrambled channels.

6



Allows:
- Recording of all channels through the converter box.
- Recording a scrambled or unscrambled channel while watching another (scrambled or unscrambled) channel.
- Using the programmable timer to record only the channel selected at the converter box.

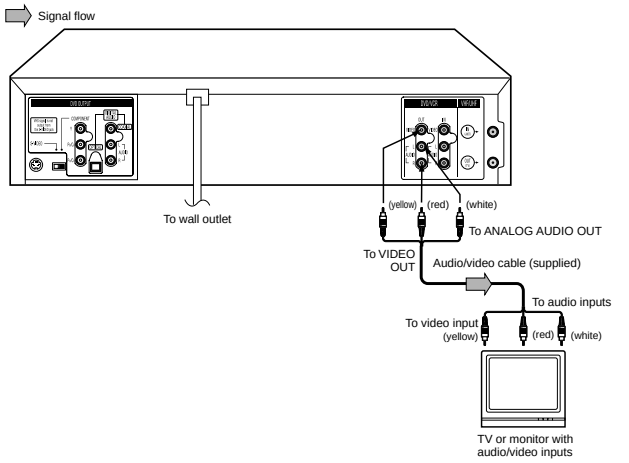
Prevents: Using the DVD/VCR tuner to select channels.

Connecting to a TV

Connect the DVD/VCR to your TV.

Note: This method transports VHS and DVD-video signals. For enhanced DVD-video performance, we recommend you also connect the S-video or ColorStream® component video outputs to your TV/monitor. (See page 19.)

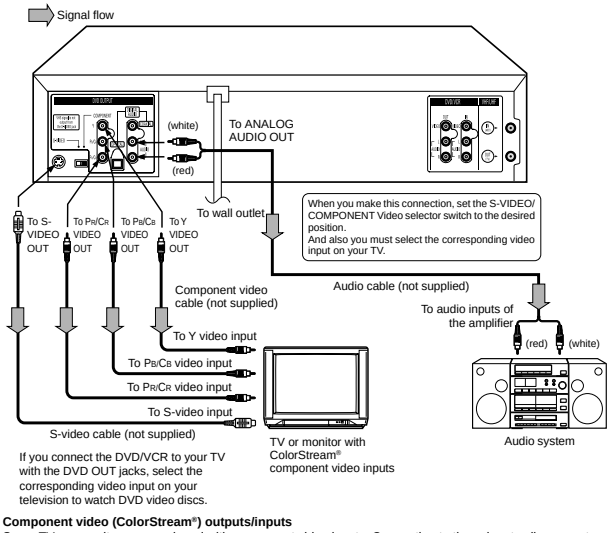
Connecting to a TV



Notes:
- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD/VCR to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the left and right audio outputs of the DVD/VCR to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD/VCR directly to your TV. If you connect the DVD/VCR to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

Note: The S-video output and component video output transports the DVD-video signal exclusively and will deliver enhanced DVD video picture performance.

Connecting to an audio system and TV equipped with S-video input/component video inputs


Signal flow
(white)
To ANALOG AUDIO OUT
(red)
To wall outlet
To S-VIDEO OUT
To PB/CB VIDEO OUT
To PR/CR VIDEO OUT
To Y VIDEO OUT
When you make this connection, set the S-VIDEO/ COMPONENT Video selector switch to the desired position.
And also you must select the corresponding video input on your TV.
Component video cable (not supplied)
Audio cable (not supplied)
To audio inputs of the amplifier
To Y video input
To PB/CB video input
To PR/CR video input
To S-video input
(red)
(white)
S-video cable (not supplied)
TV or monitor with ColorStream® component video inputs
Audio system

If you connect the DVD/VCR to your TV with the DVD OUT jacks, select the corresponding video input on your television to watch DVD video discs.

Component video (ColorStream®) outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy the highest quality DVD picture playback.
Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, C_B, C_R)
In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Notes:
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD/VCR near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD/VCR away from the tuner and radio.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.
- An S-Video connection is superior to Video (Yellow) output. Use this method for DVD playback when the connected television has S-Video input, and does not have component video inputs.

Connecting to optional equipment

You can enjoy high quality dynamic sounds of DVD video discs or audio CDs by connecting the DVD/VCR to optional audio equipment.

For connection to your TV, see "Connecting to a TV" 18 19.

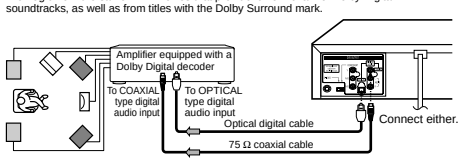
: Front speaker : Center speaker
: Rear speaker ⇨ : Signal flow
: Sub woofer

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD/VCR to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. ©1992-1997 Dolby Laboratories. All rights reserved.

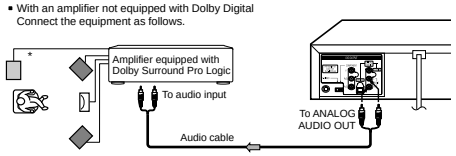
- Use DVD video discs encoded via the Dolby Digital recording system.


Amplifier equipped with a Dolby Digital decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with Dolby Surround Pro Logic

Dolby Surround Pro Logic
You can enjoy the dynamic realistic sound of Dolby Surround Pro Logic by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Surround Pro Logic sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



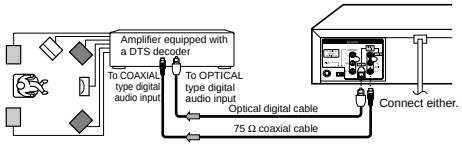
* Connect one or two rear speakers. The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.

- Use DVD video discs or audio CDs encoded via the DTS recording system.

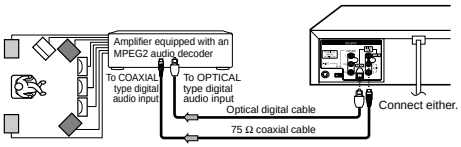

Amplifier equipped with a DTS decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Warning
When playing DTS-encoded discs (audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD/VCR are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.

Connecting to an amplifier equipped with an MPEG2 audio decoder

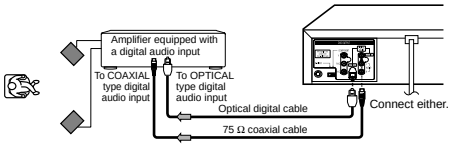
MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

- Use DVD video discs encoded via the MPEG2 recording system.


Amplifier equipped with an MPEG2 audio decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with a digital audio input

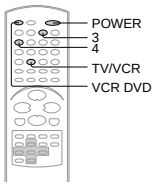
2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Notes:
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the "OPTICAL" or "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting the video channel

When a TV is connected with the 75 ohm coaxial cable only.
To view playback of a recorded tape or DVD disc, or to watch a program selected by the VCR's channel selector, the TV must be set to channel 3 or 4 (video channel).

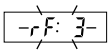


Setting the video channel

1 Press and hold 3 or 4 on the remote for 3 seconds in standby mode.

3 OR 4

The video channel will start to flash for 3 seconds in the display window.



2 Press POWER to turn on the DVD/VCR.

I/⏻

3 Press VCR DVD selector to select the VCR mode.

VCR DVD

The VCR indicator on the front panel will light.

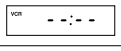
VCR

4 Turn ON the TV and set to CH 3 or 4 to correspond with the channel selected in step 1.

5 Press TV/VCR to select the VCR position.

TV/VCR

The VCR indicator will appear in the display window.



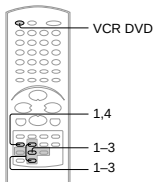
6 Select any channel to receive a TV station in your area. The channel number will appear on the screen for about 4 seconds.

■For a push-button TV tuner
If CH 3 or 4 corresponding to the video channel cannot be tuned on your TV, proceed as follows: set the VCR 3/4 channel selector and the TV to CH 3 or 4, play back a prerecorded tape and tune the TV to receive a sharp color picture from the video cassette recorder. Refer to your TV owner's manual for details.

Notes:
- **If the unit does not operate properly, or No key operation (by the unit and/or the remote control):** Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.

Setting the language

You can choose from three different languages (English, French and Spanish) for the on-screen displays.



Setting the language

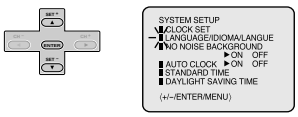
Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 Press VCR MENU.

VCR MENU SETUP

The VCR menu screen will appear. Press **SET +** or **–** to select "SYSTEM SETUP", then press **ENTER**.
If you use the unit for the first time and press **VCR MENU**, instead of the main menu screen the "SYSTEM SETUP" menu screen in step **2** may appear.

2 Press SET + or – to select "LANGUAGE", then press ENTER.



3 Press SET + or – to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press ENTER.

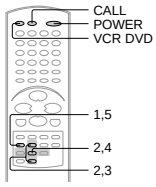
4 Press VCR MENU until the MENU screen is cleared.

VCR MENU SETUP

Notes:
- Both the VCR and the DVD have their own player menus 57.
- If no buttons are pressed for more than 60 seconds, the VCR MENU screen will return to normal TV-operation automatically.

Clock setting

The AUTO CLOCK function will automatically set the built-in clock (Month, Day, Year and Time) when the DVD/VCR is connected to an Antenna or Cable system and it is turned off. The DVD/VCR searches for a station in your area containing the necessary AUTO CLOCK setting signals. Once received, it will take approximately 4 minutes for the clock to set itself automatically.



AUTO CLOCK setting

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Connect the Antenna or Cable system.**
- If you use a cable box, turn it on.

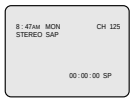
2 **Plug the AC Power cord to the AC outlet.**

3 **Make sure the DVD/VCR is turned off.**
- If you press **POWER**, the Auto Clock set is not programmed.

4 **Wait at least three minutes and press POWER.**

5 **Press CALL to check the clock setting on the on screen display.**

CALL DISPLAY



6 **If the clock is not set, check the antenna condition. The AUTO CLOCK may not function properly if the reception condition is not good.**

AUTO CLOCK adjustment

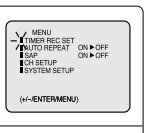
The auto clock adjustment will be updated at 6:00 AM, 12:00 PM and 6:00 PM everyday when the DVD/VCR turned off.
- If you use a cable box and you want AUTO CLOCK adjustment to be performed, the cable box must be left on.
- The AUTO CLOCK adjustment is not effective when there is a difference of more than 5 minutes exists between the built-in clock time and the actual time.

To set AUTO CLOCK to off

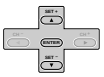
When shipped from factory the AUTO CLOCK is set to "ON". But if you do not want AUTO CLOCK setting:

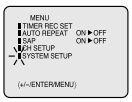
1 **Press VCR MENU.**

VCR MENU SETUP

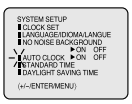


2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**





3 **Press SET + or – to select "AUTO CLOCK".**



4 **Press ENTER to select "OFF".**

5 **Press VCR MENU repeatedly to return to the normal screen.**

VCR MENU SETUP
- When the AUTO CLOCK is set to "OFF", the AUTO CLOCK adjustment does not function.
- Set the clock manually (26).

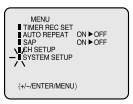
To set STANDARD TIME

In the rare event that you live within broadcast range of two stations in two different time zones, the DVD/VCR may recognize the wrong station for the AUTO CLOCK setting. To correct the situation:

1 **Press VCR MENU.**

VCR MENU SETUP

2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**



3 **Press SET + or – to select "STANDARD TIME", then press ENTER.**

4 **Press SET + or – to select your time zone, then press ENTER.**

ATLANTIC	: GMT–4hours
EASTERN	: GMT–5hours
CENTRAL	: GMT–6hours
MOUNTAIN	: GMT–7hours
PACIFIC	: GMT–8hours
ALASKA	: GMT–9hours
HAWAII	: GMT–10hours
AUTO	: AUTO SET

(GMT: Greenwich Mean Time)

5 **Press VCR MENU twice to return to the normal screen.**

VCR MENU SETUP

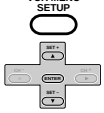
Notes:
- To be able to select the standard time, the clock must first be set by AUTO CLOCK once.
- If you live in Newfoundland and the AUTO CLOCK does not function properly, set the AUTO CLOCK menu option to "OFF" and set the clock manually.

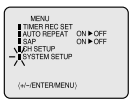
To set DAYLIGHT SAVING TIME

You can set the DAYLIGHT SAVING TIME automatically or manually.

1 **Press VCR MENU. Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

VCR MENU SETUP

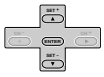




2 **Press SET + or – to select "DAYLIGHT SAVING TIME", then press ENTER.**

3 **Press SET + or – to select one of the options, then press ENTER. Press VCR MENU until the MENU screen is cleared.**

VCR MENU SETUP



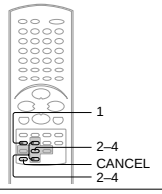
ON: for manual setting (forward one hour)
OFF: for manual setting (back one hour)
AUTO: for automatic setting (read XDS in the signal)

When you want to set the DAYLIGHT SAVING TIME manually, on the first Sunday in April you set to "ON", and on the last Sunday in October you set to "OFF".

Notes:
- When shipped from factory, the DAYLIGHT SAVING TIME is set to "AUTO" position.
- When the clock is not set, DAYLIGHT SAVING TIME setting is not available.
- When there is no DAYLIGHT SAVING TIME in your area, always select "OFF" position in step 3.

Clock setting (continued)

If the AUTO CLOCK process did not set the date and time correctly, you must set them manually for timer recording and DAYLIGHT SAVING TIME.



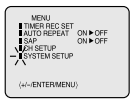
Manual clock Setting

EXAMPLE: Setting the clock to "8:30 AM" October, 26 (SUN), 2003.

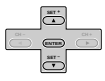
1 **Press VCR MENU.**

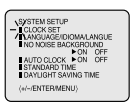
VCR MENU SETUP

2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

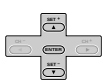


3 **Press SET + or – to select "CLOCK SET", then press ENTER.**





4 **Press SET + or – to set the month, then press ENTER.**



5 **Set the day, year and time as in step 4.**

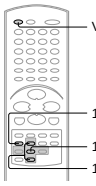
6 **After setting the clock, date and time starts functioning automatically.**

■ **To make corrections any time during the process**
Press **CANCEL** repeatedly until the item you want to change blinks, then press **SET +** or **–**.

Note:
After a power failure or disconnection of the power, the timer settings will be lost. In this case, reset the present time.

Tuner setting

This DVD/VCR is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the DVD/VCR's memory. In addition to normal VHF and UHF channels, this DVD/VCR can receive up to 113 Cable TV channels. To use this DVD/VCR with an antenna, set the TV/CATV menu option to the TV mode. When shipped from the factory, this menu option is in the CATV mode.

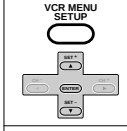


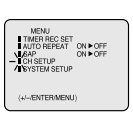
TV/CATV selection

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

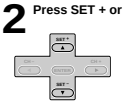
1 **Press VCR MENU. Press SET + or – to select "CH SETUP", then press ENTER.**

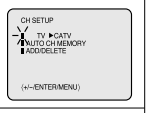
VCR MENU SETUP



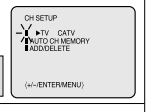


2 **Press SET + or – to select "TV/CATV".**





3 **Press ENTER to select the TV or CATV mode.**
The arrow indicates the selected mode.



TV - VHF/UHF channels
CATV - CABLE TV channels

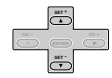
4 **Press VCR MENU until the menu screen is cleared.**

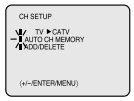
VCR MENU SETUP

Note:
You can't select "CH SETUP" if you set the channel to "L1" or "L2".

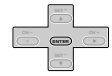
Setting channels automatically

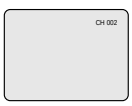
1 **Repeat left step 1 and press SET + or – to select "AUTO CH MEMORY".**



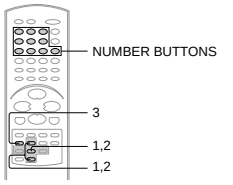


2 **Press ENTER.**
Auto tuning will begin. The channel display will count up and when finished, the screen returns to normal.





Tuner setting (continued)



To ADD/DELETE channels

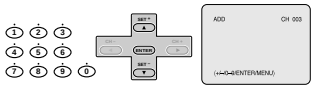
1 **Repeat the step 1 on page 27. Then press SET + or – to select the "ADD/DELETE" and press ENTER.**

2 **To Add or Delete desired channels**

1 Press **Number buttons** or **SET +** or **–** to select a channel number you want to add or delete.

2 **To add channels**
Press **ENTER** until "ADD" appears on the screen.
To delete channels
Press **ENTER** until "DELETE" appears on the screen. The channel number will blink.

3 Repeat 1 to 2 to add or delete other channel.



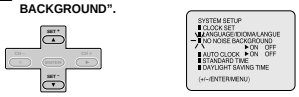
3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

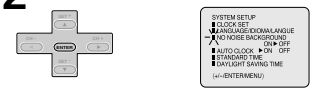
Noise elimination

When you don't want to receive a weak signal broadcast, a Blue back screen can be obtained by selecting the NO NOISE BACKGROUND "ON". When the unit is shipped from the factory, the NO NOISE BACKGROUND is set to "ON".

1 **Repeat the steps 1~2 on page 26 and press SET + or – to select "NO NOISE BACKGROUND".**



2 **Press ENTER to select "ON" or "OFF" position.**

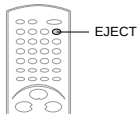


3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

Loading and unloading a cassette tape

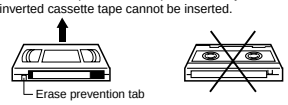
Use only video cassette tapes marked VHS and S-VHS.



Loading

Push the center of the tape until it is automatically inserted.

Insert the cassette tape with its labeled side facing up and the erase prevention tab positioned at your left. An inverted cassette tape cannot be inserted.

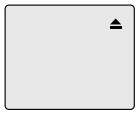


Automatic power ON
When you insert a cassette tape the DVD/VCR power will turn ON automatically.

Automatic playback
When loading a cassette tape without an erase prevention tab, playback will start automatically.

Unloading

1 Press **EJECT** on the front panel or on the Remote.

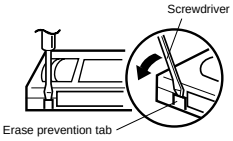


2 Remove the cassette tape.

Automatic tape eject
This DVD/VCR will automatically rewind the tape when the tape has ended. Once the tape is rewound to its beginning, the cassette tape will be ejected automatically.

To prevent accidental erasure

To prevent accidental erasure
Remove the erase prevention tab with a screwdriver.



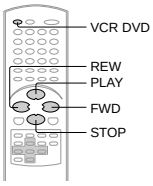
To record again
Cover the hole with a piece of adhesive tape.

Tape speed and maximum recording time

Tape Speed	Video cassette tape				
	T-160	T-120	T-90	T-60	T-30
SP (Standard Play)	2-2/3 hours	2 hours	1-1/2 hours	1 hour	30 minutes
SLP (Super Long Play)	8 hours	6 hours	4-1/2 hours	3 hours	1-1/2 hours

Cassette tape playback

To play a prerecorded tape.

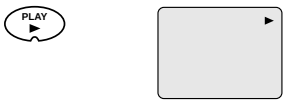


Playback

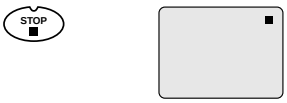
Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light).

1 **Load a prerecorded tape**
(When loading a cassette tape without the erase prevention tab, playback will start automatically).

2 **To start playback**
Press **PLAY**.
Playback will start. " ▶ " will appear on the screen for about 4 seconds.



To stop playback
Press **STOP** once.
The tape will stop but remain fully loaded and ready to play.
" ■ " will appear on the screen for about 4 seconds.

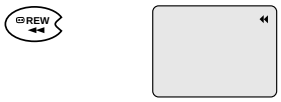


Notes:
- This VCR selects the playback tape speed SP, LP or SLP automatically.
- The Cassette tape and DVD disc can be played back simultaneously. If you press **VCR DVD** selector, the tape playback and DVD playback alternate with each other on the screen (via CH3, 4 or video connection).
- When you select the VCR mode during DVD playback, DVD playback will stop automatically after approx. 5 minutes.

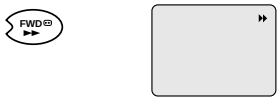
Rewind or forward the tape

Stop the playback or recording via **STOP** on remote.

To rewind the tape:
Press **REW**.



To forward the tape:
Press **FWD**.

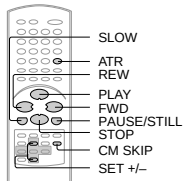


To discontinue the tape-winding, press **STOP**. To switch to playback directly (without **STOP**), press **PLAY**.

■ **Forward/Reverse picture search mode**

When the tape is being winded, you can switch to picture search mode (see next page). To do this, press **REW** or **FWD** and hold it down. The unit will resume the tape advance or rewinding as soon as the button is released.

Special playback



Picture search

Reverse picture search function
Press **REW** once or twice during playback.
Forward picture search function
Press **FWD** once or twice during playback.
To return to playback, press **PLAY**.

SPEED SEARCH TIMES

TAPE SPEED	PICTURE SEARCH SPEED	
	PRESS ONCE	PRESS TWICE
SP (Standard Play)	3 X	5 X
LP (Long Play)	7 X	9 X
SLP (Super Long Play)	9 X	15 X

Still picture

Press **PAUSE** during playback.
To resume normal playback, press **PLAY** or **PAUSE/STILL**.

Slow motion

During playback press **SLOW**.
To return to playback, press **PLAY** or **SLOW**.

■ **Slow tracking and vertical lock adjustment**
If noise bars appear in the picture during slow motion, press the **SET +/–** to reduce the noise bars.
If the still picture jitters excessively, press **SET +/–** to stabilize the still picture.

Frame by frame picture

Press **PAUSE/STILL** during playback.
Press **SLOW** repeatedly: The picture advances frame by frame.
To return to playback, press **PLAY** or **PAUSE/STILL**.

CM skip

Press **CM SKIP** during playback. The DVD/VCR will search forward through approximately 30 seconds of the tape (e.g. unwanted commercial time) for each press of **CM SKIP** (maximum six presses) and then resume normal playback.

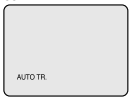
For example : 1 press: 30 seconds of tape
2 press: 60 seconds of tape
3 press: 90 seconds of tape

Adjusting tracking condition

■ **Automatic tracking adjustment**
Whenever you insert a tape and start playback, the automatic tracking feature continuously analyzes the signal to enable optimum picture quality during playback.

■ **Manual tracking adjustment**
If automatic tracking cannot eliminate noises well during playback, press **SET +/–** to eliminate the noise. "MANUAL TR." will appear on the screen. Press it briefly for a fine adjustment, or press and hold for a coarse adjustment.

Press **ATR** to reactivate automatic tracking again. "AUTO TR." will appear on the screen.



Notes:
- The audio output is muted during SPEED SEARCH, STILL, FRAME ADVANCE and SLOW MOTION.
- During picture search mode there will be noise bars. This is not a defect.
- Playback will commence after approx. 5 minutes to protect the video tape against excessive wear during pause mode.

Video head cleaning

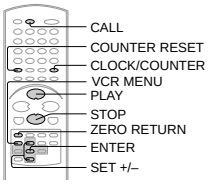
Video head clogging
■ The video heads are the means by which the DVD/VCR reads the picture from the tape during playback. In the unlikely event that the heads become dirty enough to be clogged, no picture will be displayed. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the DVD/VCR checked and cleaned by qualified service personnel.

Good Picture

Snowy Picture

Notes:
- DO NOT ATTEMPT TO CLEAN THE VIDEO HEADS OR SERVICE THE UNIT BY REMOVING THE REAR COVER.
- Video heads may eventually wear out and should be replaced when they fail to produce clear pictures.
- To help prevent video head clogging, use only good quality VHS tapes. Discard worn out tapes.

Convenience function



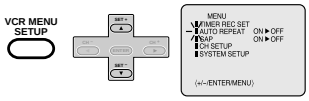
Repeat playback

The entire video tape will play until its end. The tape will automatically rewind to the beginning and the playback will be repeated.

1 **Press VCR MENU.**

Press **SET +** or **–** to select "AUTO REPEAT".

VCR MENU SETUP



2 **Press ENTER to select "ON" or "OFF".**

If "ON" is selected, the playback will be repeated endlessly.

3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

If you press **CALL**, "↺" will appear on the screen 11.

4 **To commence playback, press PLAY.**

The playback will be repeated endlessly.

PLAY

To cancel repeat mode:
Follow the above step **1**, then press **ENTER** to select "OFF" position. Press **VCR MENU** to return to the TV.

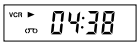
Zero return function

This function rewinds the tape to the "00:00:00" counter position automatically.

1 **Press CLOCK/COUNTER.**

The counter display shows the tape running time during playback or recording.

CLOCK/COUNTER



2 **Press COUNTER RESET at the desired tape position.**

The counter display will be reset to "00:00:00" position (e.g. the beginning of recording).

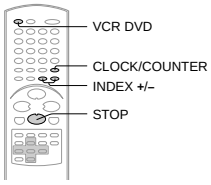
COUNTER RESET ANGLE

3 **Press STOP when playback or recording is completed.**
Press ZERO RETURN.

The tape will automatically rewind or fast forward to the "00:00:00" counter position.

STOP

ZERO RETURN JUMP



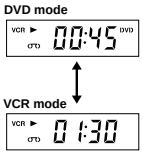
Clock/counter display

Press **CLOCK/COUNTER**. The clock and tape counter alternate with each other in the display window.

CLOCK/COUNTER

Press **VCR DVD selector**. The DVD mode and the VCR mode alternate with each other in the display.

VCR DVD



Notes:
- If you rewind the tape beyond "00:00:00", a minus sign ("–") will be displayed in front of the time.
- When you load a tape, the counter will reset to "00:00:00".
- The counter does not function on nonrecorded (blank) sections of the tape. When you rewind, fast forward or play tapes through blank sections, the counter stops.

Video index search system

This function enables you to locate the beginning of any recording made on the VCR.

Recording an INDEX mark
The Index Search function automatically records an INDEX mark on the tape whenever a recording is initiated.

Index search
Press **INDEX +** or **–** during stop or play mode.
For Succeeding programs: Press **INDEX +**.
For Preceding programs: Press **INDEX –**.
(As many as 9 index points can be accessed via this method.)
When the **INDEX +** or **–** is pressed, the unit starts searching the INDEX NO. selected and finds the portion, then playback starts automatically. To stop the Index Search, press **STOP**.

INDEX SKIP ⏮ STOP ⏭ INDEX+ SKIP

⏭ or ⏮ is displayed

INDEX NO. (up to 9)

Notes:
- When you record an INDEX mark at the very beginning of the tape, the mark may not be found.
- During INDEX search, the tape may stop and begin to play at a slightly different location.
- INDEX may not function properly with old or worn out video tapes.
- INDEX marks may not be found if it is extremely close to the point where the search began.
- In recording, if you stop recording temporarily, the INDEX mark is not recorded on the tape.

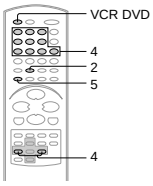
SQPB (S-VHS Quasi Playback)

You can playback video cassette tapes recorded in the S-VHS system.
However, the picture will not have the high resolution of S-VHS system.

Note: You cannot record S-VHS video format with this VCR.

Recording a TV program

Recording and viewing the same TV program.

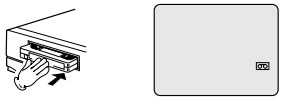


Recording a TV program

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Load a cassette tape with the erase prevention tab intact.**

The DVD/VCR will automatically turn on.



2 **Press SP/SLP to select the desired tape speed SP or SLP.**

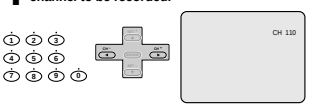
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

SP/SLP PLAY MODE

3 **Select "TV" or "CATV" to the appropriate position 27.**

TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press Number button or CH +/– to select the channel to be recorded.**



TV mode direct channel selection:
All channels can be instantly selected by using two buttons. (for example, to select channel 2, press "0", then "2". If you press only "2", channel selection will be delayed for two seconds.) For channels 10 and above, press the 2 digits in order.

CATV mode direct channel selection:

1-9	Press **0** twice and then **1-9** as required. Example: To select "2", Press **002**.
10-12	Press **0** first and then the remaining 2 digits in order from left to right. Example: Press **012** for "12".
13-99	Press 2 digits in order. Example: Press **22** for "22".
100-125	Press the 3 digits in order. Example: Press **110** for "110".

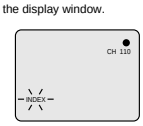
VHF/UHF/CATV CHANNELS

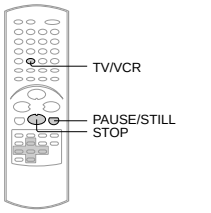
TV	CATV
VHF 2-13	VHF 2-13
UHF 14-69	STD/HRC/IRC 14-36 (A) (W) 37-59 (AA) (WW) 60-85 (AAA) (ZZZ) 86-94 (86) (94) 95-99 (A-5) (A-1) 100-125 (100)(125) 01 (5A)

5 **Press REC.**

" ● " will appear on the screen for about 4 seconds and "REC" will appear on the display window.

REC/OTR





To stop recording

Press STOP to stop recording.

STOP

" ■ " will appear on screen for about 4 seconds.

To stop recording temporarily

Press PAUSE/STILL to avoid recording unwanted material. Press again to continue the recording.

PAUSE/STILL

" ●II " will appear on screen for about 4 seconds.

Notes:
- The pause function will be released after 5 minutes to prevent damage to the tape or the VCR. The VCR will change to the STOP mode.
- You can select a recording channel in the recording pause mode.

Recording one program while watching another

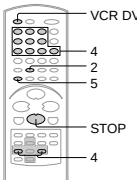
While the VCR is recording, select your desired channel on the TV.
When a TV is connected with an antenna cable only, press TV/VCR to select the TV position.
The "VCR" display will go off and recording will continue.
Select the TV channel you want to watch by using the TV channel selector.

Note:
Some CATV hookups do not permit viewing one channel while recording another. See pages 16 and 17.

■ Auto Rewind feature
This VCR will automatically rewind the tape when the tape has ended (except during OTR and timer recording). It will also eject the tape.

One-touch Timer Recording (OTR)

The One-touch Timer Recording feature provides a simple and convenient way to make a timed recording.



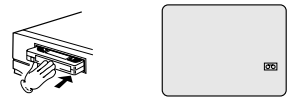
One-touch Timer Recording (OTR)

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

Example: One-touch Timer Recording for 30 minutes.

1 **Load a cassette tape with the erase prevention tab intact.**

The VCR will automatically turn on.



2 **Press SP/SLP to select the desired tape speed SP or SLP.**

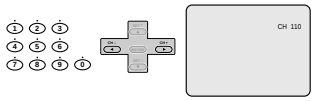
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

SP/SLP
PLAY MODE

3 **Set "TV" or "CATV" option to the appropriate position** 27**.**

TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press Number button or CH +/– to select the channel to be recorded.**

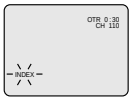


5 **Press OTR. Recording begins. Press the button again to stop recording after 30 minutes. Each additional press of OTR will increase recording time as shown in the chart below, up to a maximum of 6 hours.**

The OTR and recording time will appear on the screen for about 4 seconds. And, " ● " will appear on the display.

Press	Recording time	Press	Recording time
once	NORMAL REC	6 times	3:00
twice	0:30	7 times	4:00
3 times	1:00	8 times	5:00
4 times	1:30	9 times	6:00
5 times	2:00	10 times	NORMAL REC

REC/OTR



To cancel OTR

Press **STOP** or turn off the power.

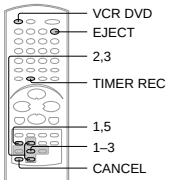
STOP

" ■ " will appear on screen for about 4 seconds.

Note:
If you wish to watch the DVD playback during OTR or standard recording, press **VCR DVD** selector to change to DVD mode and perform the DVD playback 43.

Timer recording

Timer recording can be programmed on-screen with the remote control. The built-in timer allows automatic unattended recording of up to 8 programs within 1 month.



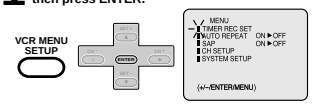
Timer recording

Preparation:
- Press **VCR DVD** selector to select the VCR mode.
- Load a cassette tape with the erase prevention tab intact.
- Check the time and date are correct 24.

Example: Program a timer recording for the 26th day, channel 125 (CATV), 11:00 - 11:30 PM on timer program number 1 (Tape speed: SLP).

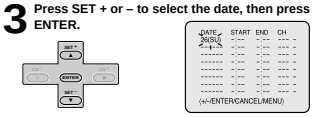
1 **Press VCR MENU. Select "TIMER REC SET", then press ENTER.**

VCR MENU
SETUP



2 **Press SET + or – to select one of the program line, then press ENTER.**

3 **Press SET + or – to select the date, then press ENTER.**



4 **Set the start time, end time, channel and tape speed as in step 3.**

Notes:
- Press **CANCEL** to move cursor backward for correction.
- To record from external source set the channel to "L1" or "L2".

5 **To enter other programs, repeat step 2 through 4.**

VCR MENU
SETUP

- To return to the normal screen, press **VCR MENU** twice.

6 **Press TIMER REC. The timer symbol ( ) will appear on the display and the VCR stands by for recording.**

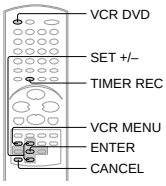
TIMER REC

At the same time, VCR mode will change to DVD mode automatically. You can use DVD even if the VCR is in the timer recording mode.
If you do not use the DVD, turn the power off.

Notes:
- The timer recording will start at 5 seconds before the time you predetermined.
- If the timer symbol( ) does not appear on the display in spite of the pressing of **TIMER REC**, the cassette may not have been loaded. 29
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed. 29

Notes:
- If the timer symbol ( ) blinks when the timer recording ended, the TV program has not been completely recorded because of an insufficient tape length. Press **TIMER REC** to cancel the timer program or press **EJECT** to remove the cassette tape.
- During timer recording standby mode, the VCR mode cannot be operated. To use the VCR, press **TIMER REC** at first, then press **VCR DVD** selector to change to VCR mode. After you use the VCR, press **TIMER REC** again to put the VCR into timer recording standby mode.
- If you press **TIMER REC** during timer recording, the recording operation will be interrupted. If you press **TIMER REC** again within the programmed time, the recording operation will start again.
- After a power failure or disconnection of the power plug, all programmed recording settings and time display will be lost upon resumption of power. In this case, reset the clock 24 and reprogram any timer recording.

Timer recording (continued)

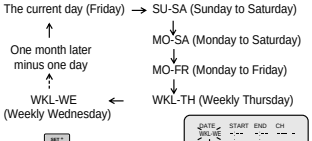


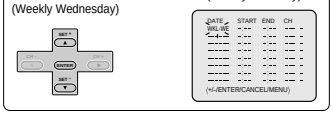
To set daily/weekly timer

Weekly (e.g. WKL-TU: each Tuesday) or daily (e.g. MO-SA: Monday to Saturday) Timer recording

Follow the procedure of timer recording on the previous page. At step **3** press **SET +** or **–** repeatedly until the desired setting appears. Then press **ENTER**.

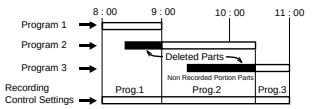
When you press **SET –** repeatedly, the DATE indicator will change as follows, in this case the day is Friday.


The current day (Friday)
SU-SA (Sunday to Saturday)
MO-SA (Monday to Saturday)
MO-FR (Monday to Friday)
WKL-TH (Weekly Thursday)
WKL-WE (Weekly Wednesday)
One month later minus one day



If the programs overlap another

Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.



Notes:
- The daily/weekly recording can be made continuously until the recording is canceled or the tape reaches the end.
- During timer recording the automatic rewinding mechanism does not function.

To confirm or cancel a program

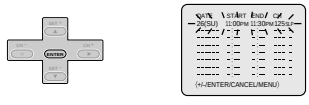
1 **If the Timer has been activated, press TIMER REC to deactivate the Timer.**

The timer symbol ( ) will disappear. Then press **VCR DVD** selector to change to VCR mode.

TIMER REC
VCR DVD

2 **To confirm Timer program:**

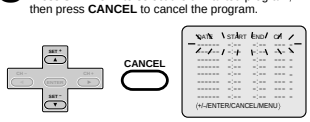
At step **1** on the previous page select "TIMER REC SET" and press **ENTER**.
The timer program list will appear on the screen.



3 **To cancel Timer program:**

Press **SET +** or **–** to select the unwanted program, then press **CANCEL** to cancel the program.

CANCEL

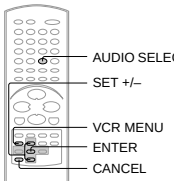


4 **Press VCR MENU repeatedly until the menu screen is cleared.**

VCR MENU
SETUP

Notes:
- If there are other timer record programs remaining, **TIMER REC** must be pressed to reactivate the timer, otherwise the remaining timer record programs will be ignored.
- You cannot confirm the Timer program during timer recording operation.
- You can correct or cancel a programmed setting in program confirm mode.

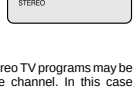
Stereo recording and playback / Second Audio Program (SAP)



Stereo recording and playback

The VHS Hi-Fi audio system permits high fidelity recording of MTS STEREO TV broadcasts.

When a MTS STEREO broadcast is received, "STEREO" will appear on the screen for about 4 seconds and the program can be viewed or recorded in stereo. The Hi-Fi stereo recording procedure is the same as for normal recordings.



Note:
When using a CATV system, stereo TV programs may be transmitted over a mono cable channel. In this case "STEREO" will not appear and the sound will be in mono.

AUDIO SELECT
AUDIO

Output selection
When viewing an MTS stereo TV program, or playing a prerecorded VHS Hi-Fi stereo videotape, press **AUDIO SELECT** to select how the audio will be heard through the speakers. Normally set to the Hi-Fi stereo position, this button can be set to the MONO position if the stereo broadcast or videotape audio is of poor quality. The "R" and "L" positions allow the audio from the Right or Left Hi-Fi channel to be heard over both TV speakers. This button has no effect when viewing a MONO videotape or TV program. Each time when you press the button, OUTPUT SELECTION display appears on the screen for several seconds. Refer to the chart below.

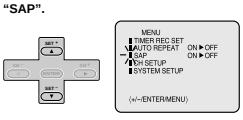
OUTPUT SELECTION	SOUND HEARD ON BOTH SPEAKERS
STEREO	STEREO
L CH	LEFT CHANNEL AUDIO
R CH	RIGHT CHANNEL AUDIO
MONO	MONO

Second Audio Program (SAP)

Your DVD/VCR is fitted with a SAP broadcast system which enables you to switch to a second audio program when viewing a selected channel.
This function applies only when the program is broadcast in multi-languages through the SAP broadcast system.

1 **Press VCR MENU. Then press SET + or – to select "SAP".**

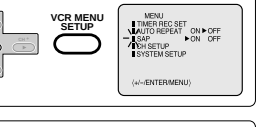
VCR MENU
SETUP



2 **Press ENTER to select "ON".**

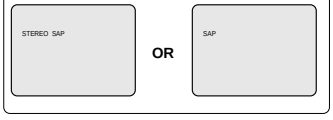
Then press **VCR MENU** until the menu screen is cleared.

VCR MENU
SETUP



Listening to SAP

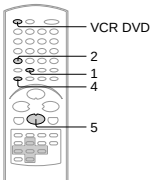
When the VCR is turned on or a channel selection is made, make certain the letters "SAP" appears on the screen for about 4 seconds. This means that the "Second Audio Program" broadcasting is available.



Notes:
- When playing back a tape that is not recorded in Hi-Fi stereo mode, the audio will automatically be monaural.
- When listening to a VHS Hi-Fi video tape or MTS broadcast through the VHF/UHF jack (Audio/Video cable not connected), the sound will be monaural.

Duplicating a video tape

If you connect the DVD/VCR to another VCR or Camcorder, you can duplicate a previously recorded tape. Make all connections before turning on the power.



Duplicating a video tape

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a previously recorded tape into the playback VCR or Camcorder.

1 Press SP/SLP to select the desired tape speed SP or SLP.

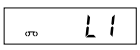
SP/SLP PLAY MODE

It is recommended that you set the tape speed to the SP mode on the recording VCR for best results.

2 Press INPUT SELECT once or twice to select AUDIO/VIDEO input position.

"L1" or "L2" will appear in the display.

INPUT SELECT



L1: on the rear panel
L2: on the front panel

3 Press PLAY on the playback VCR or Camcorder.

4 Press REC on the recording VCR.

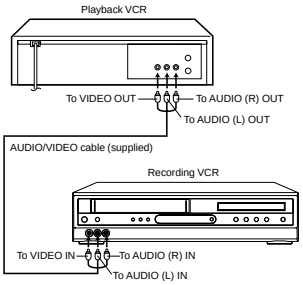
The duplicating process begins.

REC/OTR

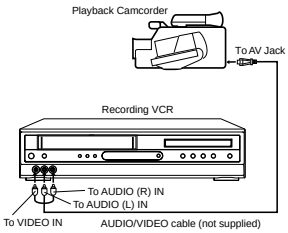
5 Press STOP after duplicating a video tape.

STOP

Connection with second VCR



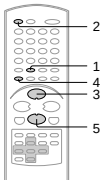
Connection with Camcorder



For duplicating a previously recorded tape from a camcorder, follow the camcorder manufacturer's instructions. A typical camcorder dubbing hookup is shown above.

Recording a DVD/CD disc

You can record disc material in DVD, Audio CD, etc. onto a Video tape with this DVD/VCR.



Duplicating a DVD or CD disc

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a DVD/CD disc.

1 Press SP/SLP to select the desired tape speed SP or SLP.

SP/SLP PLAY MODE

2 Press VCR DVD selector to select the DVD mode.

The DVD indicator will light.

VCR DVD

DVD

3 Press PLAY to start playback.

PLAY

4 Press REC to start recording.

REC/OTR

The DVD/VCR will change to the VCR mode automatically and the playback picture or sound will be duplicated on the video cassette tape.

5 Press STOP if you finish recording.

If you wish to stop a DVD/CD disc, press **VCR DVD** selector to change the DVD mode, then press **STOP**.

STOP

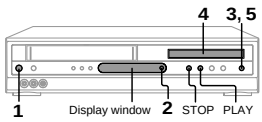
Notes:
- You may not be able to record the beginning of the disc. Begin VCR recording once program playback commences on the DVD.
- You can not record discs encorded with copy guard function. The following icon and text will show up on the TV screen.

DISC IS COPY PROTECTED

Playing a disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



Basic playback

Preparations:
- When you want to view a disc, turn on the TV and select the corresponding video input connected to the DVD/VCR. This may include S-video or component video inputs which are exclusive to DVD playback.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD/VCR.

1 Press ON/STANDBY (I /⏻).

ON/STANDBY

The DVD/VCR turns on.

2 Press VCR/DVD SELECT to select the DVD mode.

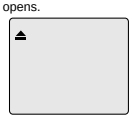
VCR/DVD SELECT

The DVD indicator will light.

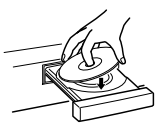
3 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray opens.



4 Place the disc on the disc tray.



With the playback side down

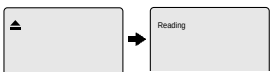
- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD/VCR to malfunction.
- Do not place a disc which is unplayable in this DVD/VCR.

5 Press OPEN/CLOSE or PLAY on the unit.

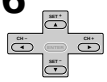
OPEN/CLOSE ⏏ OR ▶

The disc tray closes automatically. On the TV-screen, "⏏" changes to "Reading" and then playback commences.

- A menu screen will appear on the TV screen, if the disc has a menu feature.



6 Press ▲/▼ or ◀/▶ to select title.



7 Press ENTER.

- Title is selected and play commences.

8 Press STOP to end playback.

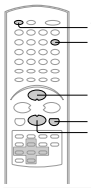
STOP

- The unit records the stopped point, depending on the disc. "■" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc (" ■ " appears on the screen.), the unit will clear the stopped point.

■ To start playback in the stop mode

Press **PLAY**.

▶



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD/VCR, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCD CD

The DVD VCD CD icons on the heading bar show the playable discs for the function described under that heading.
- DVD : You can use this function with DVD video discs.
- VCD : You can use this function with Video CDs.
- CD : You can use this function with Audio CDs and CD-R/RW CDs.

■ To pause playback (still mode)

Press **PAUSE/STILL** during playback.

PAUSE/STILL

To resume normal playback, press the PLAY button.

- The sound is muted during still mode.

■ To stop playback

Press **STOP**.

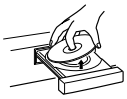
STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE

Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

■ Playing a Disc while the VCR section is recording or standing by for timer recording

1) Start to record.
Follow step 1~5 on page 34.
- If the DVD/VCR is standing by for recording, turn on the DVD/VCR.

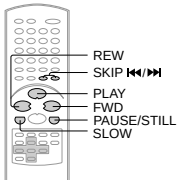
2) Press VCR DVD selector to select DVD mode. The DVD indicator will light.
3) Play a disc.
Follow step 3 ~ 5 on page 42.
- Press PLAY if the DVD/VCR does not start to play a disc automatically.

4) Stop to play.
Press STOP to stop play back a disc.

Notes:
- If a non-compatible disc is loaded, "Incorrect Disc", "Region Code Error" or "Parental Error" will appear on the TV screen according to the type of loaded disc. In this case, check your disc again (See pages 8 and 60).
- Some discs may take a minute or so to start playback.
- When you set a single-faced disc label downwards (ie. the wrong way up) and press the OPEN/CLOSE button or the PLAY button on the unit, "Reading" will appear on the display for 30 seconds and then "Incorrect Disc" will continue to be displayed.
- Some playback operations of DVDs may be intentionally fixed by software producers. Since this unit plays DVDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs.
- Do not move the DVD/VCR during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD/VCR to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD/VCR to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the ON/STANDBY (I /⏻) button on your remote control once the movie is completed.
- During the DVD playback if you change the operating mode from DVD to VCR, the DVD will continue to play back the disc and stop after about 5 minutes.
- There may be a slight delay between you pressing the button and the function activating.

Playing a disc (continued)

You can play discs at various speeds.



Playing in fast reverse or fast forward directions

Press REW or FWD during playback.

REW FWD

REW: Fast reverse playback
FWD: Fast forward playback

Each time you press the REW or FWD button, the playback speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY

Notes:

- The DVD/VCR mutes sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD/VCR plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STILL during still playback.

PAUSE/STILL

Each time you press the PAUSE/STILL button, the picture advances one frame.

■ To resume normal playback

Press **PLAY**.

PLAY

Note:

The sound is muted during frame by frame playback.

Playing in slow-motion

Press SLOW during playback.

SLOW

Each time you press the SLOW button, the slow-motion speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY

Note:

The sound is muted during slow-motion playback.

Locating a chapter or track

Press SKIP ⏮ or ⏭ repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.

INDEX+ SKIP ⏭

To locate succeeding chapters or tracks.

-INDEX SKIP ⏮

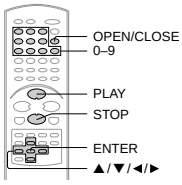
Playback starts from the beginning of the current chapter or track.
When you press twice in quick successions, playback starts from the beginning of the preceding chapter or track.

Notes:

- A "Prohibition" symbol may appear at the upper left of the screen. This symbol means either the feature you tried is not available on the disc, or the DVD/VCR can not access the feature at this time. This does not indicate a problem with the DVD/VCR.
- The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

MP3/WMA/JPEG playback

This player can play back the MP3/WMA/JPEG-data which has been recorded on CD-R or CD-RW. To produce the MP3/WMA/JPEG-data, you need a Windows-PC with CD-ROM drive and a MP3/WMA/JPEG-encoding Software (not supplied).
The Apple-HFS-System can not be played.



MP3/WMA Playback

1 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray will open.
Place a disc on which MP3 or WMA files have been recorded onto the tray.

2 Press OPEN/CLOSE or PLAY.

OPEN/CLOSE PLAY

The disc tray closes automatically.
On the TV-screen,"Reading" will appear.
Reading will take as much time as the number of file.

3 A file menu screen will appear on the TV screen.
Press ◀ or ▶ to select folder.

4 Press ▲/▼ or ◀/▶ or Number keys to select the desired file, then press ENTER.

The file is selected and play commences.

- In case the folder includes more than 15 tracks, press ◀ or ▶ to display next file list.
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed after pressing **PLAY** in step 2, playback begins automatically starting from the first file. In this case, if the first file is an MP3/WMA file, only MP3/WMA files are played back in order.
If the first file is a JPEG file, the first JPEG file is played back.

5 Press STOP to end playback.

PLAY STOP

- The unit records the stopped point. "⚑" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc, the unit will clear the stopped point.

MP3/WMA/JPEG CD Information

Limitations on MP3/WMA/JPEG CD playback

- MP3/WMA/JPEG CD is the disc that is standardized by ISO9660, its file name must include 3-digits extension letters, "mp3", "wma", "jpg".
- The directory and file names of the MP3/WMA/JPEG CD must be correspond to the ISO standardized files.
- This unit can read 200 files per disc. If a disc has more than 200 files, it reads up to 200 files, the remaining files will be omitted.
- The unit is able to recognize up to a maximum of 50 directories per disc.
- MP3/WMA CDs cannot be used for playback for the purpose of recording.
- If the CD has both audio tracks and MP3/WMA/JPEG files, only audio tracks are played.
- It may take more than one minute for this unit to read MP3/WMA/JPEG files depending on its structure.
- Music recorded by "Joliet Recording Specification" can be played back, the file name is displayed (within 16 letters) on the screen. Long file names will be condensed.
- The music files recorded by "Hierarchical File System" (HFS) cannot be played.
- The unit can play back baseline and progressive JPEG files.

Limitations on display

- The maximum number for display is 16 letters. Available letters for display are the following: capital or small alphabets of A through Z, numbers of 0 through 9, and _ (under score).
- Other letters than those above are replaced in hyphen.

WMA disc compatibility with this player is limited as follows:
1) Sampling Frequency: within 32 -- 44 KHz
2) Bit Rate: within 48kps -- 80kps.
Mono WMA files and WMA files (under 48kps) cannot be played back on this player.

Notes on MP3/WMA/JPEG files

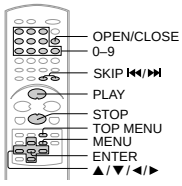
To play back MP3/WMA/JPEG CD in the recorded order,
1. Use MP3/WMA/JPEG software that records data alphabetically or numerically.
2. Name each file including two-digit or three-digit number (e.g. "01" "02" or "001" "002").
3. Refrain from making too many sub-folders.

CAUTION:

- Some MP3/WMA/JPEG CDs can not be played back depending on the recording conditions.
- The CD-R/RW that has no music data or non-MP3/WMA/JPEG files can not be played back.

MP3/WMA/JPEG playback (continued)

You can select your desired JPEG file on the file menu and picture menu. The selected JPEG file is automatically adjusted to the TV screen. (When the aspect ratio of the JPEG file is different to your TV screen, the black bar will appear at the top and bottom, or the both sides of the TV screen.



JPEG CD playback

1 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray will open.
Place a disc on which JPEG files have been recorded onto the tray.

2 Press OPEN/CLOSE or PLAY.

OPEN/CLOSE PLAY

The disc tray closes automatically.
On the TV-screen, "Reading" will appear.
Reading will take as much time as the number of file.

3 A file menu screen will appear on the TV screen.
Press ◀ or ▶ to select folder.

4 Press ▲/▼ or ◀/▶ or Number keys to select the desired file.

To display a picture menu, press MENU.
(To return to a file menu, press TOP MENU.)
Press ▲/▼ or ◀/▶ to select the desired file.

MENU TOP MENU

- To display next list, press **SKIP** ⏭ or ⏮.
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed after pressing **PLAY** in step 2, playback begins automatically starting from the first file. In this case, if the first file is a JPEG file, the first JPEG file is played back. If the first file is an MP3/WMA file, only MP3/WMA files are played back in order.

5 Press ENTER.

The selected picture appears on the TV screen.

6 Press STOP to end playback.

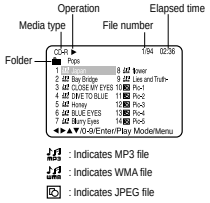
STOP

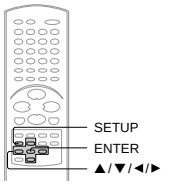
The file menu appears on the TV screen.
If you want to watch the other file, repeat steps 4-5.

Notes:

- The picture menu is displayed when the FUJICOLOR CD or the Kodak Picture CD are played. To display the file menu press **TOP MENU**.
- During MP3/WMA/JPEG-Playback, you can not use SEARCH, A-B Repeat functions.
- You can use Repeat (Track or All), Random functions and Program playback for MP3/WMA/JPEG CD Playback. (See pages 52 and 53.)
- In the case of a CD containing a mixture of MP3, WMA and JPEG files, the files are played back by selecting them from the file menu.

File menu information





Setting the JPEG Interval

You can continuously play back all JPEG files automatically.
After the setting below, start playing the disc on which JPEG files have been recorded.

1 Press SETUP in the stop mode. Press ◀ or ▶ to select "Picture", then press ENTER.

VCR MENU SETUP

Language Picture Sound Parental Other
◀▶▲▼/Enter/Setup/Return

2 Press ▲ or ▼ to select "JPEG Interval".

Language Picture Sound Parental Other
Tv Screen 4:3
Display On
JPEG Interval Off
Select Files All
◀▶▲▼/Enter/Setup/Return

3 Press ENTER or ◀/▶ to select your desired time.

Language Picture Sound Parental Other
Tv Screen 4:3
Display On
JPEG Interval 5 Seconds
Select Files All
◀▶▲▼/Enter/Setup/Return

Off:
Plays back one file at a time.

5 Seconds:
Plays back images in the form of a slide show at 5 second intervals.

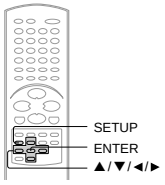
10 Seconds:
Plays back images in the form of a slide show at 10 second intervals.

15 Seconds:
Plays back images in the form of a slide show in 15 second intervals.

4 To make SETUP screen disappear, press SETUP.

VCR MENU SETUP

MP3/WMA/JPEG playback (continued)



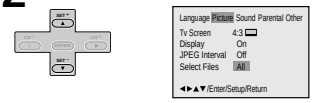
Setting the Select Files

When playing back a CD containing a mixture of MP3, WMA and JPEG files, only MP3/WMA or JPEG files can be displayed on the file menu.

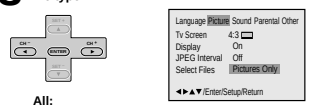
1 **Press SETUP in the stop mode.**
Press ◄ or ► to select "Picture", then press ENTER.

VCR MENU SETUP

2 **Press ▲ or ▼ to select "Select Files".**



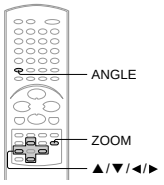
3 **Press ENTER or ◄ / ► to select your desired file type.**



All:
Displays all files.
Music Only:
Displays only MP3/WMA files.
Pictures Only:
Displays only JPEG files.

4 **To make SETUP screen disappear, press SETUP.**

VCR MENU SETUP



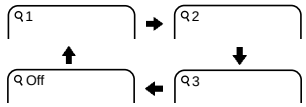
Zooming (JPEG CD)

This unit will allow you to zoom in on the JPEG image.

1 **Press ZOOM during playback.**

CM SKIP ZOOM

Enlarged JPEG images are displayed. You can make the images even larger by repeatedly pressing **ZOOM**.



2 **Press ▲ / ▼/ ◄ / ► to view a different part of the frame.**

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 **In the zoom mode press ZOOM repeatedly to return to a 1:1 view (Off).**

CM SKIP ZOOM

Changing angles (JPEG CD)

You can display JPEG images rotating at 90 degree intervals.

1 **Press ANGLE during playback.**
Images are rotated 90 degrees to the right.

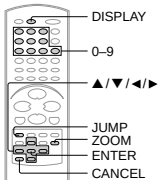
COUNTER RESET ANGLE

2 **Press ANGLE repeatedly until the desired angle is selected.**
Pressing ANGLE four times returns the image to its original angle.

COUNTER RESET ANGLE

- Images are displayed at the same angle until the disc is removed.

Zooming/Locating desired scene



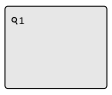
Zooming

This unit will allow you to zoom in on the frame image. You can then make selections by switching the position of the frame.

1 **Press ZOOM during playback.**

CM SKIP ZOOM

The centre part of the image will be zoomed in.
Each press of **ZOOM** will change the ZOOM 1 (x 1.3), 2 (x 1.5) and 3 (x 2.0).



2 **Press ▲ / ▼/ ◄ / ► to view a different part of the frame.**

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 **In the zoom mode press ZOOM repeatedly to return to a 1:1 view (Off).**

CM SKIP ZOOM

Notes:
- You can select the Pause, Slow or Search playback in the zoom mode.
- Some discs may not respond to zoom feature.

Locating desired scene

Use the title, chapter and time recorded on the disc to locate the desired point to play back.
To check the title, chapter and time, press **DISPLAY**.

1 **Press JUMP during playback or stop mode.**

ZERO RETURN JUMP

2 **Press ▲ or ▼ to select the "Time", "Title" or "Chapter".**

3 **Press Numbered buttons (0-9) to change the number.**

- If you input a wrong number, press **CANCEL**.
- Refer to the package supplied with the disc to check the numbers.

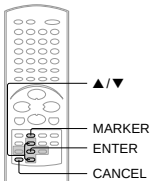
4 **Press ENTER. Playback starts.**

- When you change the title, playback starts from Chapter 1 of the selected title.
- Some discs may not work in the above operation.

Note:
In case of the Video-CD playback with PBC, the JUMP does not work.

Marking desired scenes

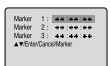
The unit stores the points that you want to watch again up to 3 points.
You can resume playback from each scene.



Marking the Scenes

1 **Press MARKER during playback.**

MARKER



2 **Select the blank Marker using ▲ or ▼. Then press ENTER at the desired scene.**

- Repeat this procedure to set the other 2 scenes.

3 **Press MARKER to remove this display.**

MARKER

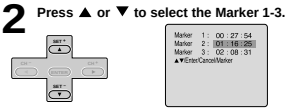
Notes:
- Some discs may not work with the marking operation.
- The marking is canceled when you open the disc tray or turn the power off.
- Some subtitles recorded around the marker may fail to appear.

Returning to the Scenes

1 **Press MARKER during playback or stop mode.**

MARKER

2 **Press ▲ or ▼ to select the Marker 1-3.**

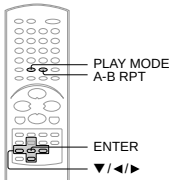


3 **Press ENTER.**

Playback starts from the marked scene.

■ To cancel the Marker
Follow the above steps 1~2, then press **CANCEL**.

Repeat playback/A-B Repeat playback



Repeat playback of Title, Chapter and Track

1 **Press PLAY MODE during playback or stop mode.**

SP/SLP
PLAY MODE

2 **DVD**
Press ◄/► or ENTER once or twice to select "Chapter" or "Title".

CD/VCD
Press ▼ to select "Repeat".
Press ◄/► or ENTER once or twice to select "Track" or "All".

3 **Press PLAY MODE again to make the screen disappear.**
Press PLAY to start Repeat playback.
To resume normal playback, select Repeat "Off".

Note:
Some discs may not work with the repeat operation.

A-B Repeat playback

A-B repeat playback allows you to repeat material between two selected points.

1 **Press A-B RPT during playback.**

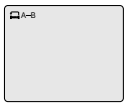
A-B RPT

The start point is selected.

2 **Press A-B RPT again.**

A-B RPT

The end point is selected. Playback starts at the point that you selected. Playback stops at the end point, returns to Point A automatically, then starts again.



■ **To resume normal playback**
Press **A-B RPT** again.

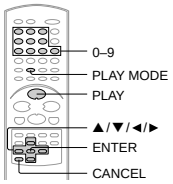
A-B RPT

"Off" appears on the screen.

Notes:
- In A-B repeat mode, subtitles near point A or B may not appear.
- A-B Repeat playback is not available in multi-angle scenes.
- You may not be able to set A-B Repeat, depending on the scenes of the DVD.
- A-B repeat does not work with an interactive DVD, MP3/WMA/JPEG CD and Video CD with PBC.

Program playback/Random playback (CD)

You can arrange the order of tracks on the disc.



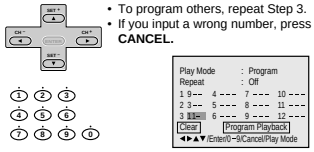
Program Playback

1 **Press PLAY MODE in the stop mode.**

SP/SLP
PLAY MODE

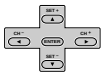
2 **Press ▲ or ▼ to select Play Mode, then press ◄/► or ENTER to select "Program".**

3 **Press ▲/▼ or ◄/► to select the programming position. Use Numbered buttons (0-9) to input the Track numbers.**

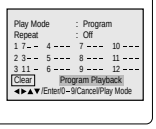


- To program others, repeat Step 3.
- If you input a wrong number, press **CANCEL**.

4 **Press ▲/▼ or ◄/► to select "Program Playback" and press ENTER.**



The programmes you selected will start to playback in the order.
To return to normal playback, select Play Mode: "Off".



■ **To cancel program playback**
Select "Clear" and press **ENTER**.

- The program is canceled when you open the disc tray or turn the power off.

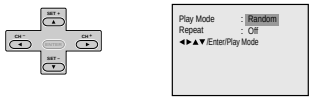
Note:
In playing back the Video CD with PBC, you can not set Program playback.

Random Playback

1 **Press PLAY MODE in the stop mode.**

SP/SLP
PLAY MODE

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select "Random".**



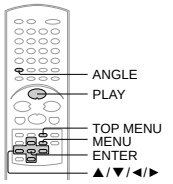
3 **Press PLAY.**

PLAY

The Random Playback will start.

Note:
In playing back the Video CD with PBC, you can not set Random playback.

Changing angles/Title selection/DVD menu



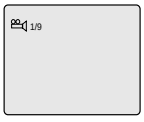
Changing Angles

When playing back a disc recorded with multi-angle facility, you can change the angle that you are viewing the scene from.

1 **Press ANGLE during playback.**

The current angle will appear.

COUNTER RESET
ANGLE



2 **Press ANGLE repeatedly until the desired angle is selected.**

COUNTER RESET
ANGLE

Note:
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Title Selection

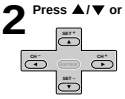
Two or more titles are recorded on some discs. If the title menu is recorded on the disc, you can select the desired title.

1 **Press TOP MENU during playback.**

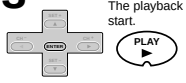
TOP MENU

Title menu appears on the screen.

2 **Press ▲/▼ or ◄/► to select the desired title.**



3 **Press ENTER or PLAY.**



The playback of the selected title will start.

Note:
Depending on the DVD, you may not be able to select the title. Depending on the DVD, a "title menu" may simply be called a "menu" or "title" in the instructions supplied with the disc.

DVD Menu

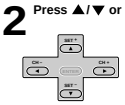
Some DVDs allow you to select the disc contents using the menu.
When you play back these DVDs, you can select the subtitle language and sound-track language, etc. using the menu.

1 **Press MENU during playback.**

MENU

The DVD menu appears on the screen.
- Press **MENU** again to resume playback at the scene when you pressed **MENU**.

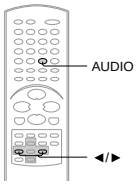
2 **Press ▲/▼ or ◄/► to select the desired item.**



3 **Press ENTER.**

The menu continues to another screen. Repeat steps **2** and **3** to set the item completely.

Changing soundtrack language/ Setting surround sound



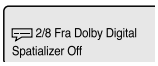
Changing soundtrack language

You can select the language when you play a multilingual disc.

1 **Press AUDIO during playback.**

AUDIO SELECT
AUDIO

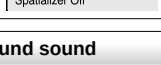
The current soundtrack language will appear.



2 **Press AUDIO repeatedly until the desired language is selected.**

AUDIO SELECT
AUDIO

The on-screen display will disappear after a few seconds.



■ **In case of VIDEO CD playback**
Audio type changes as follows each time you press **AUDIO**.

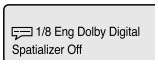
Notes:
- If the desired language is not heard after pressing the button several times, the language is not recorded on the disc.
- Changing soundtrack language is cancelled when you open the disc tray. The initial default language or available language will be heard if the disc is played back again.

Setting surround sound

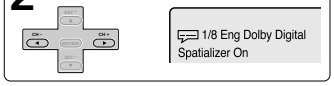
This DVD/VCR equipped with a "SPATIALIZER VIRTUAL SURROUND". It can produce the effect of being in a cinema or a concert hall.

1 **During disc playback press AUDIO.**

AUDIO SELECT
AUDIO



2 **Press ◄ or ► to select "On".**

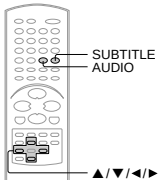


■ **To cancel Surround mode**:
Follow the left steps **1**~**2**, then press ◄ or ► to select the "Off" position.

Note:
The "SPATIALIZER VIRTUAL SURROUND" is effective only for the sound of disc.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products. Inc.
Certain audio features of this product manufactured under a license from Desper Products, Inc., Spatializer® and the circle-in-square device are trademarks owned by Desper Products, Inc.

Setting subtitles/Karaoke playback



Turning the subtitles on and off

When playing back a disc recorded with subtitles, you can turn the subtitles on or off.

Press SUBTITLE during playback until "Off" appears.

ATR SUBTITLE

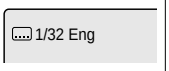
Note:
Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
Depending on the DVD, you may not be able to turn the subtitles off.

Changing the subtitle language

You can select the language when playing back a disc recorded with multi-lingual subtitles.

1 Press SUBTITLE repeatedly during playback until your desired language appears.

ATR SUBTITLE



2 The on-screen display will disappear after a few seconds.

Notes:
- Changing subtitle language is cancelled when you open the disc tray.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. While playing the DVD, the subtitle may change when: -you open or close the disc tray -you change the title.
- In some cases, the subtitle language is not changed to the selected one immediately.

Karaoke playback

You can turn the vocal on or off recorded on the DVD KARAOKE.

1 During DVD KARAOKE disc playback, press AUDIO.

AUDIO SELECT AUDIO

2 Press ▲ or ▼ until the KARAOKE symbol ( ) appears.

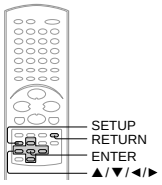
3 Press ◄ or ► to select "On" or "Off".

On : The primary vocal is output when it is recorded on the disc.
Off : The primary vocal is not output.

Notes:
- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing Karaoke, connect appropriate audio equipment such as an amplifier to the DVD/VCR.

Setting the aspect ratio of TV screen

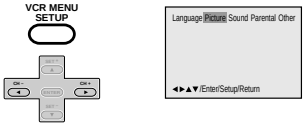
You can select the aspect ratio for your TV.
The following pages describe the setup/operation in DVD mode.



Setting the aspect ratio of TV screen

1 Press SETUP in the stop mode or No Disc. Press ◄ or ► to select "Picture".

VCR MENU SETUP



2 Press ▼ or ENTER, then press ▲ or ▼ to select "Tv Screen".

3 Press ► or ENTER.
Press ▲ or ▼ to select your desired screen type, then press ENTER.

You have the following screen sizes to choose from:

4:3 Letter box:
Select this mode when connecting to a conventional TV. When playing back a wide screen-DVD disc, it displays the wide picture with black bands at the top and bottom of screen.

4:3 Pan scan:
It displays the wide picture on the whole screen with left and right edges automatically cut off.

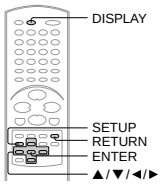
16:9 Wide:
Select this mode when connecting to a wide-screen TV. A wide screen picture is displayed full size.

4 To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.

VCR MENU SETUP
RETURN

Note:
If the DVD disc is not formatted in the pan & scan style, it displays 4:3 style.

Setting on screen display/Status display of disc

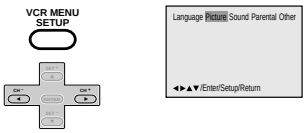


Setting on screen display

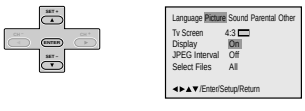
On screen display can be switched on or off when you press the buttons.

1 Press SETUP in the stop mode or No Disc. Press ◄ or ► to select "Picture".

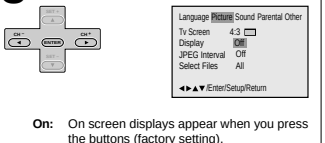
VCR MENU SETUP



2 Press ▼ or ENTER, then press ▲ or ▼ to select "Display".



3 Press ◄ / ► or ENTER to select "On" or "Off".



On: On screen displays appear when you press the buttons (factory setting).
Off: On screen displays do not appear when you press any buttons.

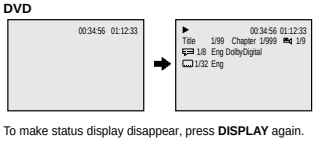
4 To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.

VCR MENU SETUP
RETURN

Status display of disc

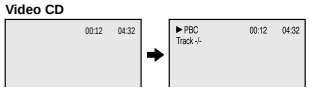
Each press of DISPLAY, the status display of the disc will appear on the screen and change as follows.

DVD



To make status display disappear, press **DISPLAY** again.

Video CD

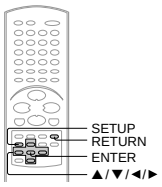


Audio CD

When you playback the CD disc, the status display will appear on the screen and continue displaying.

Dynamic Range Control

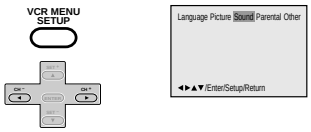
DRC (Dynamic Range Control) enables you to control the dynamic range so as to achieve a suitable sound for your equipment.



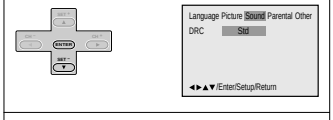
Dynamic Range Control

1 Press SETUP in the stop mode. Press ◄ or ► to select "Sound".

VCR MENU SETUP



2 Press ▼ or ENTER to select "DRC".



3 Press ► or ENTER, then press ▲ or ▼ to select desired setting.

Max: Full dynamic range is increased.
Std: Full dynamic range is maintained.
Min: Dynamic range is reduced.

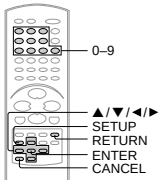
4 To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.

VCR MENU SETUP
RETURN

Notes:
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on DVD video disc.

Parental control setting

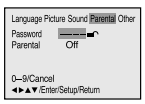
Some discs are specified not suitable for children. Such discs can be limited not to play back with the unit.



DVD Parental control setting

1 **Press SETUP in the stop mode or No Disc. Press ◄ or ► to select "Parental". Then press ▼ or ENTER.**

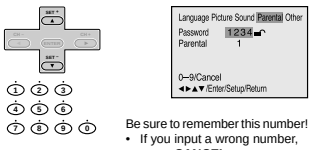
VCR MENU SETUP



2 **Press ▲ or ▼ to select "Parental", then press ◄ or ► until the level you require appears.**

- **Level Off:** The parental control setting does not function.
- **Level 8:** All DVD software can be played back.
- **Level 1:** DVD software for adults cannot be played back.
- Select from the level 1 to level 8. The limitation will be more severe as the level number is lower.

3 **Press ▲ or ▼ to select "Password". Press number buttons (0-9) to input a 4-digit password.**

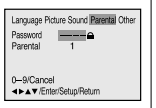


CANCEL

Be sure to remember this number!
- If you input a wrong number, press **CANCEL**.

4 **Press ENTER to store the password.**

Note: Now the rating is locked and the setting cannot be changed unless you enter the correct password.



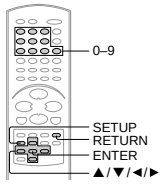
5 **Press SETUP or RETURN to remove the parental control screen.**

VCR MENU SETUP

RETURN

Notes:
- **If each setup (pages 57~66) has been completed, the unit can always be worked under the same conditions (especially with DVD discs). Each setup will be retained in the memory if you turn the power off.**
- Depending on the discs, the unit cannot limit playback.
- Some discs may not be encoded with specific rating level information though its disc jacket says "adult." For those discs, the age restriction will not work.

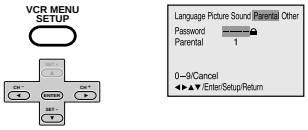
To change the parental level



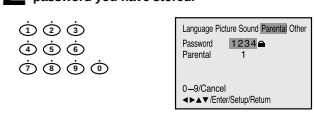
DVD To change the parental level

1 **Press SETUP in the stop mode or No Disc. Press ◄ or ► to select "Parental". Then press ▼ or ENTER.**

VCR MENU SETUP

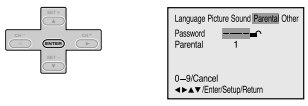


2 **Press number buttons (0-9) to enter the password you have stored.**



3 **Press ENTER.**

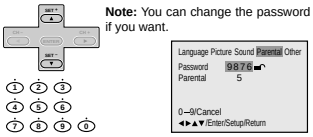
The rating is now unlocked.



4 **Press ▲ or ▼ to select "Parental", then press ◄ or ► to change the parental level.**

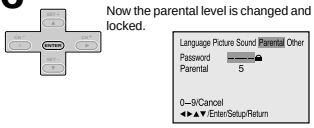
5 **Press ▲ or ▼ to select "Password", then press number buttons (0-9) to enter the password.**

Note: You can change the password if you want.



6 **Press ENTER.**

Now the parental level is changed and locked.



7 **Press SETUP or RETURN to remove the parental control screen.**

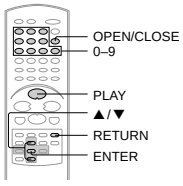
VCR MENU SETUP

RETURN

Note:
Do not forget the password. If you forget the password, contact the dealer that you purchased the unit from.

Temporary disabling of rating level by DVD disc

Depending on the DVD disc, the disc may try to temporarily cancel the rating level that you have set.
It is up to you to decide whether to cancel the rating level or not.

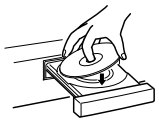


DVD Temporary disabling of rating level by DVD disc

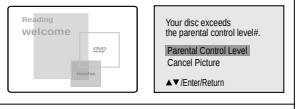
1 **Load a DVD disc and press PLAY or OPEN/CLOSE on the unit (see page 42).**

PLAY ►

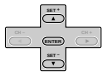
OPEN/CLOSE ⏏



2 **If the DVD disc has been designed to temporarily cancel the Rating level, the screen which follows the "Reading" screen will change, depending on which disc is played. If you select "YES" with the ENTER key, "Your disc exceeds the parental control level#." screen will then appear.**



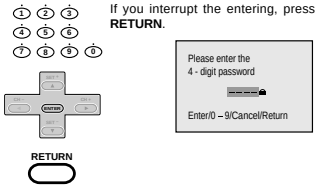
3 **If you wish to cancel the set rating level temporarily, select "Parental Control Level" with ▲ or ▼, then press ENTER. If the 4-digit password at step 2 on page 61 has been set, the password entering screen will appear as shown in step 4. Alternatively, if the password has not been set, playback will commence. If you don't know (or have forgotten) the password, select "Cancel Picture". The setting screen will disappear. Press OPEN/CLOSE to remove the disc.**



OPEN/CLOSE ⏏

4 **Enter the password with number buttons (0-9). Then press ENTER.**

If you interrupt the entering, press **RETURN**.



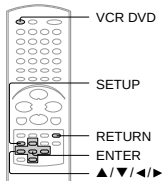
RETURN

5 **Playback will commence if the entered password was correct.**

Note:
This temporary cancellation of rating level will be kept until the disc is ejected.
When the disc is ejected, the original rating level will be set again automatically.

Setting setup language

The setup language can be selected.



DVD VCR DVD Setting setup language

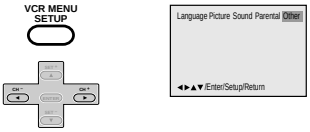
1 **Press VCR DVD selector to select the DVD mode.**

VCR DVD

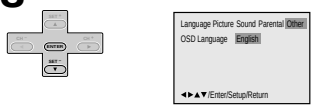
"Reading" changes to "No Disc". (If DVD disc has already loaded, the playback will start automatically.)

2 **Press SETUP in the stop mode. Press ◄ or ► to select "Other".**

VCR MENU SETUP



3 **Press ▼ or ENTER to select "OSD Language".**



4 **Press ► or ENTER and then press ▲ or ▼ to select desired language (e.g. English), then press ENTER.**

5 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

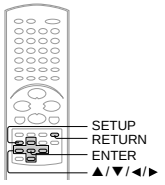
VCR MENU SETUP

RETURN

If the unit does not operate properly: Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

Setting menu language

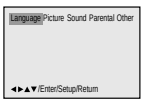
You can select the language of the disc menu messages of DVDs.



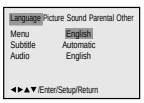
Setting menu language

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

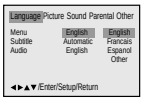
VCR MENU SETUP



2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Menu".**



3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired language, then press ENTER.



English, Francais, Espanol:
The selected language is the first-priority Menu language.

Other:
Other language can be selected (see the Language code list on page 67).

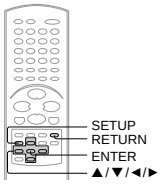
4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

VCR MENU SETUP

RETURN

Changing subtitle language

The same subtitle language can always be selected even if you replace the disc or turn the power off.



Changing subtitle language

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

VCR MENU SETUP

2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Subtitle".**

3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired language, then press ENTER.

English, Francais, Espanol:
The subtitle is displayed with the selected language if it is recorded on the disc.

Other:
If you want to select another language, enter the language code (see the language code list on page 67).

Automatic:
- The unit will automatically select the same language in the AUDIO setting.
- When the unit selects the same language as the AUDIO, the subtitles will not appear during playback.
- When you do not use the same language as the AUDIO, the subtitles will appear during playback.

Off:
Subtitles do not appear.

4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

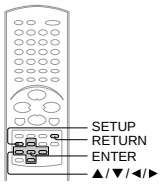
VCR MENU SETUP

RETURN

Note:
If the selected language is not recorded on the disc, the first-priority language is selected.

Setting audio soundtrack language

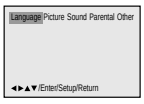
The same audio soundtrack language can always be selected by your unit even if you replace the disc or turn the power off.



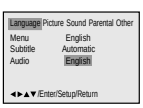
Setting audio soundtrack language

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

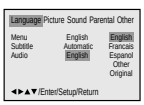
VCR MENU SETUP



2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Audio".**



3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired Audio Language, then press ENTER.



English, Francais, Espanol:
The language you have selected will play if it is recorded on the disc.

Other:
If you want to select another language, enter the language code (see the Language code list on page 67).

Original:
The unit will select the first priority language of each disc.

4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

VCR MENU SETUP

RETURN

Note:
If the selected language is not recorded on the disc, the original language will be heard.

Language code list

Enter the appropriate code number for the initial settings "Menu", "Subtitle" and/or "Audio" (see pages 64-66).

Language code list

Language Name	Code	Language Name	Code	Language Name	Code	Language Name	Code
Abkhazian	1112	Fiji	1620	Lingala	2224	Singhalese	2919
Afar	1111	Finnish	1619	Lithuanian	2230	Slovak	2921
Afrikaans	1116	French	1628	Macedonian	2321	Slovenian	2922
Albanian	2927	Frisian	1635	Malagasy	2317	Somali	2925
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Azerbaijani	1136	Guarani	1724	Moldavian	2325	Tajik	3017
Bashkir	1211	Gujarati	1731	Mongolian	2324	Tamil	3011
Basque	1531	Hausa	1811	Nauru	2411	Tatar	3030
Bengali; Bangla	1224	Hebrew	1933	Nepali	2415	Telugu	3015
Bhutani	1436	Hindi	1819	Norwegian	2425	Thai	3018
Bihari	1218	Hungarian	1831	Oriya	2528	Tibetan	1225
Breton	1228	Icelandic	1929	Panjabi	2611	Tigrinya	3019
Bulgarian	1217	Indonesian	1924	Pashto, Pushto	2629	Tonga	3025
Burmese	2335	Interlingua	1911	Persian	1611	Turkish	3028
Byelorussian	1215	Irish	1711	Polish	2622	Turkmen	3021
Cambodian	2123	Italian	1930	Portuguese	2630	Twi	3033
Catalan	1311	Japanese	2011	Quechua	2731	Ukrainian	3121
Chinese	3618	Javanese	2033	Rhaeto-Romance	2823	Urdu	3128
Corsican	1325	Kannada	2124	Romanian	2825	Uzbek	3136
Croatian	1828	Kashmiri	2129	Russian	2831	Vietnamese	3219
Czech	1329	Kazakh	2121	Samoan	2923	Volapük	3225
Danish	1411	Kirghiz	2135	Sanskrit	2911	Welsh	1335
Dutch	2422	Korean	2125	Scots Gaelic	1714	Wolof	3325
English	1524	Kurdish	2131	Serbian	2928	Xhosa	3418
Esperanto	1525	Laothian	2225	Serbo-Croatian	2918	Yiddish	2019
Estonian	1530	Latin	2211	Shona	2924	Yoruba	3525
Faroese	1625	Latvian, Lettish	2232	Sindhi	2914	Zulu	3631

Before calling service personnel

Check the following guide for the possible cause of a problem before contacting service.

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
DVD/VCR		
DVD/VCR does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Power is off, check fuse or circuit breaker. • Unplug unit, then plug it back in. • Select the DVD or VCR mode before operating.	5 – – 5 30,42
No picture.	• Antenna connection is not correct or antenna cable is disconnected. • The video channel is not in the correct position or the TV is not set to the video channel 3 or 4. • Check the unit is connected correctly. • The video input selector of the TV is not set to VIDEO. Set to VIDEO (or equivalent). • Channel is set to the external mode.	14–17 22 14–19 – –
No sound.	• Check the unit is connected correctly. • Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode.	14–19 – 31,44
The remote control does not function.	• Aim at the remote control at the remote sensor. • Operate within Approx. 7 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly.	13
No CATV reception.	• Check all CATV connections. • Station or CATV system problems, try another station.	16,17
VCR		
TV recording does not work.	• The erase prevention tab of the video cassette is broken off. • The unit is in the external input mode.	29,34
Timer recording does not work.	• The time is not set correctly. • The recording start/end time is not set correctly. • The TIMER has not been pressed (⏲ is not lit).	24 37 37
Noise bars on screen.	• Tracking adjustment beyond range of automatic tracking circuit. Try Manual tracking adjustment. • Video heads are dirty. • The tape is worn or damaged.	31 31 –
DVD		
Display is not shown in your language.	• Select proper language in the menu options.	63
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play DVD-ROMs, etc.	42 6 8
Stopping playback, slow-motion play, repeat play, or memory play, etc. cannot be performed.	• Some discs may not do some of the functions.	–
No picture	• The S-VIDEO/COMPONENT selector is not set correctly	19
No 4:3 (16:9) picture.	• The setup does not match your TV.	57
No on-screen display.	• Select Display "On".	58
No surround sound.	• The setup does not match your stereo system.	20
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the Parental setup.	60,61
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	65,66
No subtitle.	• Some discs have no subtitles. • Subtitles are cleared. Press **SUB TITLE**.	56
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	54
✋ appears on the screen.	• The function is prohibited with the unit or the disc.	44

Specifications

General

Power supply	AC 120 V 60 Hz
Power consumption	Operation: 18 W, Stand by: 2 W
Weight	7.9 lbs (3.6 kg)
Dimensions	Width: 16-15/16 inches (430 mm) Height: 3-7/8 inches (99 mm) Depth: 9-7/8 inches (251.5 mm)
Tuner	181 channel freq. synthesized VHF 2-13 UHF 14-69 CATV 125 Channels
Antenna input/output	UHF/VHF In/Out: 75 Ω coaxial
RF channel output	Channel 3 or 4, Switchable
Color system	NTSC
Video head	4 Rotary heads
Audio track	Hi-Fi sound - 2 Tracks / MONO sound - 1 Track
Hi-Fi frequency response	20 Hz to 20,000 Hz
Hi-Fi dynamic range	More than 90 dB
F.FWD/REW time at 25˚C (77˚F)	Approx. 1 minute and 48 seconds (with T-120 Cassette Tape)
Applicable disc	DVD (12 cm, 8 cm), CD (12 cm, 8 cm)
Frequency range	DVD: 4 Hz-22 kHz, CD: 4 Hz-20 kHz
S/N ratio	90dB (DVD)
Harmonic distortion	0.02% (DVD)
Wow and flutter	Less than 0.01% Wrms
Operating conditions	Temperature: 5˚C-40˚C (41˚F-104˚F), Operating status: Horizontal

Input/Output

DVD/VCR	
Video input	1.0 V (p-p), 75 Ω, negative sync., pin jack x 2
Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack x 1
Audio input	–8 dBm, 50 kΩ, negative sync., pin jack (L/R) x 2
Audio output	–8 dBm, 1 kΩ, negative sync., pin jack (L/R) x 1
DVD	
S-video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.286 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_B)/(P_R) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 Ω, pin jack × 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (ANALOG)	–12 dB, 1 kΩ, pin jacks (L, R) × 1

Supplied accessories

Audio/video cable 1
Remote control (SE-R0109) 1
Batteries (AAA) 2
75 ohm coaxial cable 1

• Designs and specifications are subject to change without notice.

LIMITED WARRANTY DVD VIDEO PLAYER

Toshiba America Consumer Products, Inc. ("TACP"), Toshiba Hawaii ("THI") and Toshiba Canada Limited ("TCL") make the following limited warranties. These limited warranties extend to original purchaser or any person receiving this set as a gift from the original purchaser and to no other purchaser or transferee.

Limited Ninety (90) Day Warranty
TACP/THI warrant this product against defects in materials or workmanship for a period of ninety (90) days after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you. You must deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Limited One (1) Year Warranty
TACP/THI further warrant the parts in this product against defects in materials or workmanship for a period of one (1) year after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you, except that if a defective part is replaced after ninety (90) days from the date of the original retail purchase you pay labor charges involved in the replacement. You must also deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products Inc.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian Consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Rental Units
The warranty for rental units begin with the first rental or thirty (30) days from the date of shipment to the rental firm, whichever comes first.

Commercial Units
Products sold and used for commercial use have a limited ninety (90) day warranty for all parts and labor.

Owner's Manual
You should read the owner's manual thoroughly before operating this product. You should complete and mail the enclosed Demographic card within ten (10) days after you, or the person who has given you this product as a gift, purchased this product. This is one way to enable TACP to provide you with better customer service and improved products. Failure to return the card will not affect your rights under this warranty.

Your Responsibility
The above warranties are subject to the following conditions:

(1) You must retain your bill of sale or provide other proof of purchase.
(2) You must notify a TACP/THI/TCL /Authorized Service Station within thirty (30) days after you discover a defective product or part.
(3) All warranty servicing of this product must be made by a TACP/THI/TCL Authorized Service Station.
(4) U.S.A. warranties are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.
(5) Labor service charges for set installation. Set up, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.
(6) Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to products or parts caused by misuse, accident, damage caused by Acts of God, such as lightning or fluctuations in electric power, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of TACP/THI/TCL or to damage to products or part thereof which have had the serial number removed, altered, defaced or rendered illegible.
(7) Should you elect to return your DVD Unit to TACP after the ninety (90) days and within one (1) year, or after the warranty period has expired: Call (800)-631-3811 to receive information concerning an exchange price. Payment must be enclosed with product in the form of a certified check or money order including reason for return.
(8) Physically damaged DVD Units are not acceptable for repair or exchange whether in or out of warranty and will be returned as received.

(Continued)

LIMITED WARRANTY DVD VIDEO PLAYER (continued)

How to Obtain Warranty Service

(1) Refer to the troubleshooting guide in your owner's manual. This check list may solve your problem.
(2) In the U.S.A., only call the TACP toll free number 800-631-3811, or if in Hawaii or Canada see listing below within (30) days after you find a defective product or part.
(3) Arrange for the delivery of the product to the TACP/THI/TCL Authorized Service Station or TACP Return Center. Products shipped to the Service Station must be insured and safely and securely packed, preferably in the original shipping carton, and a letter explaining the defect and also a copy of the bill of sale or other proof of purchase must be enclosed.

In the Continental United States contact:

In Hawaii contact:
Toshiba Hawaii Inc.
327 Kamakee Street
Honolulu, HA 96814
(808)-521-5377

In Canada contact:
Consumer Electronics Group
191 McNabb Street
Markham, Ontario L3R 8H2
(905)-470-5400

Consumer Electronics Group
22171 Fraserwood Way
Richmond, B.C. V6W 1J5
(604)-303-2500

Consumer Electronics Group
18050 Trans canada
Kirkland, Quebec H9J 4A1
(514)-390-7766

All warranties implied by state law, including the implied warranties of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranties set forth above. With the exception of any warranties implied by state law as hereby limited, the foregoing warranty is exclusive and in lieu of all other warranties, guarantees, agreements and similar obligations of manufacturer or seller with respect to the repair or replacement of any parts. In no event shall TACP/THI be liable for consequential or incidental damages.
No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP/THI arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.
This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitation on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above provisions may not apply to you.

ATTENTION CANADIAN CONSUMERS:
Canadian consumers are requested to complete the special Canadian "Warranty Registration Form" enclosed, and forward this completed form with a copy of bill of sale to TOSHIBA OF CANADA to "Register and Validate" their warranty. Product must be purchased from an Authorized Canadian Dealer. Products purchased in the U.S.A. and used in Canada are not covered by these warranties.

IMPORTANT: PACKING AND SHIPPING INSTRUCTION
When you send the product to a Service Station, you must use the original carton box and packing material, then insert the original carton box containing the unit into another carton using more packing material.

CAUTION

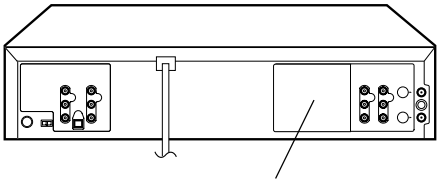
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.

IMPORTANT SERVICE SAFETY INFORMATION

Safety precautions to be followed during servicing:

1. Parts marked with an ⚠ are critical parts for safety. Replace only with the one described in the parts list.
2. Before returning the DVD product to the customer, make the appropriate leakage current check or resistance measurements to ensure that exposed parts are properly insulated from the supply circuit.

A leakage current check is recommended for this unit. Plug the AC line cord directly into a 120V 60Hz AC outlet (do not use an isolation transformer for this check). Use a leakage current tester (Fig. 1) or a metering system which complies with Underwriters Laboratories (UL 1409). Measure for current from all exposed metal parts of the cabinet to a known earth ground: particularly, any exposed metal part having a return path to the chassis. Any current measured must not exceed 0.5mA. Any measurement not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the unit to the customer.

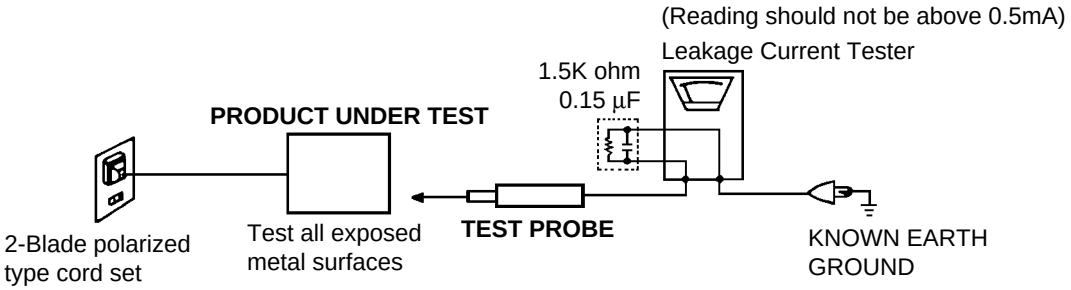


Fig. 1 AC Leakage Test

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS**
   Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **POWER SOURCES**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **LIGHTNING**
    To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
    Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
    Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

IMPORTANT SAFEGUARDS (CONTINUED)

17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

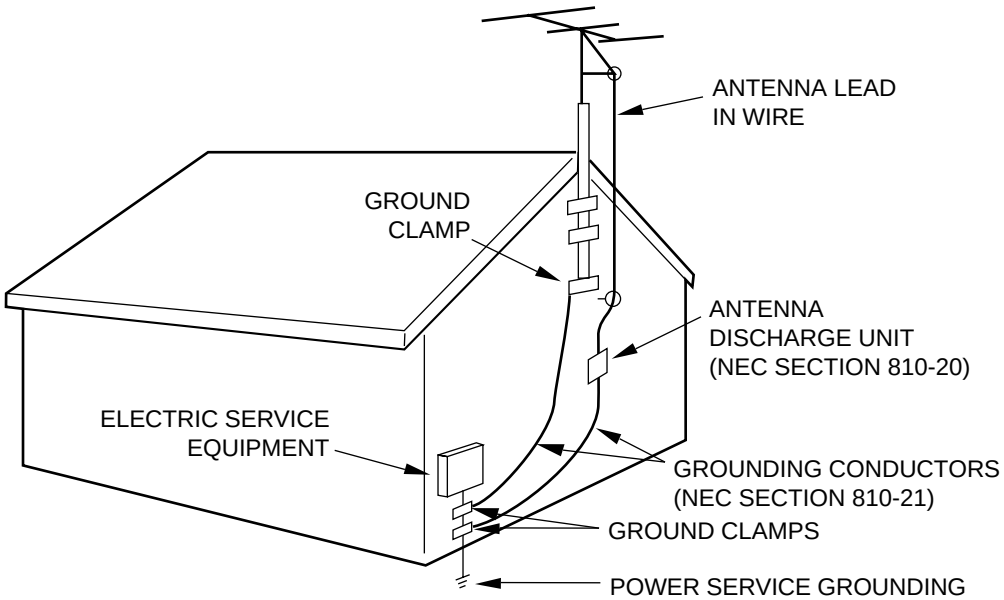
30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer’s attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove the screw ① of the Deck Chassis and remove the Loading Motor. **(Refer to Fig. 2)**
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
4. Rotate the Clutch Ass'y either of the derections to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

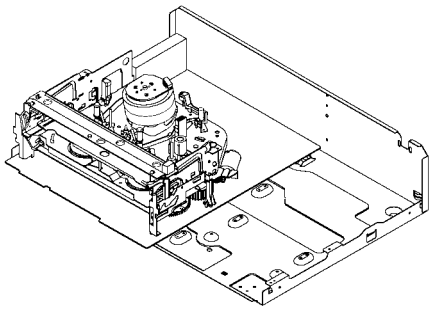


Fig. 1

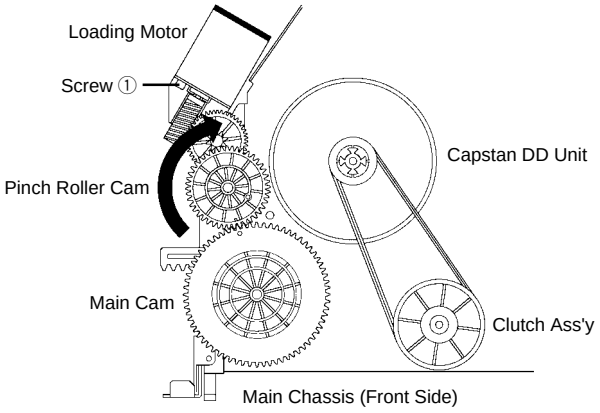


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY**
2. **INSTRUCTIONS.)**
   Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock.
3. **(Refer to Fig. 1)**
   Draw the Tray.

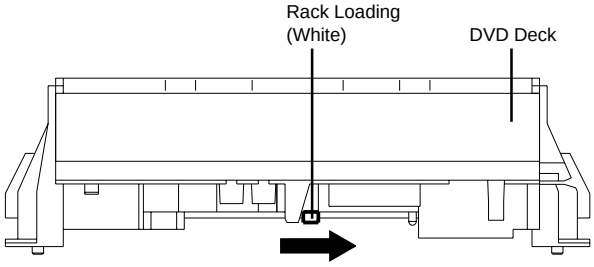


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared

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GENERAL SPECIFICATIONS

G-1	**Outline of the product**				DVD VIDEO PLAYER & VHS Player / Recorder
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Disc Loading
			Motor		2 Motors
		Pick up			1-Lens 2-Beams System
		Playback time (Max)	DVD 1-Layer		135min (4.7GB)
			DVD 2-Layer		245min (8.5GB)
			CD		74min
			VIDEO CD		74min
		Search speed			Fwd 2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
					Rev 2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
		Slow speed			Fwd 1/7-1/2 times
				Actual	--
					Rev --
				Actual	--
G-3	**VCR**	System			VHS Player / Recorder
	System	Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB(PAL60Hz)			No
		Deck	DECK		OVD-7
			Loading System		Front
			Motor		3
		Heads	Video Head		4Head
			FM Audio Head		2Head
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec PAL		-
			Rec NTSC		SP/SLP(EP)
			Play PAL		-
			Play NTSC		SP/SLP(EP)
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				with Cassette	T-120
		Forward/Reverse Picture Search	NTSC or PAL-M		SP/LP/SLP(EP) = 3x,5x / 7x,9x / 9x,15x
			PAL or SECAM		-
		Frame Advance			Yes
		Slow Speed			1/10
G-4	**Tuning**	Broadcasting System			US System M
	System	Tuner and Receive CH	System		1Tuner
			Destination		US (w/CATV)
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 OHM
			CH Coverage		2~69,4A,A-5~A-1,A~I J~W,W+1-W+84
		Intermediate Frequency	Picture(FP)		45.75 MHz
			Sound(FS)		41.25 MHz
			FP-FS		4.50 MHz
		Preset CH			-
		RF Converter Output			Yes
			Channel		3 or 4 ch
			Level/Impedance		66 dBu / 75 Ohm
			Sound Selector		No
		Stereo/Dual TV Sound			US-ST
		Tuner Sound Muting			Yes
G-5	**Power**	Power Source	AC		120V 60Hz
			DC		-
		Power Consumption			18 W at 120V 60Hz
			Stand by		2 W at 120V 60Hz
			Per Year		-- W
		Protector	Power Fuse		Yes
G-6	**Regulation**		Safety		UL / CSA
			Radiation		FCC / IC
			Laser		DHHS
G-7	**Temperature**		Operation		5oC - 40oC
			Storage		-20oC - 60oC

GENERAL SPECIFICATIONS

G-8	**Operating Humidity**			Less than 80% RH
G-9	**Signal**	Video Signal	Output Level	1 V p-p/75 ohm (DVD,VCR)
			S/N Ratio (Weighted)	65 dB(DVD) 50 dB(VCR)
			Horizontal Resolution	500 Lines (DVD) 230 Lines(VCR Mode)
		RGB Signal	Output Level	-
		Audio Signal	Input Level Microphone	-
			Input Level Line	-8 dBm/ 50k ohm(VCR)
			Output Level Line	-8 dBm/ 1k ohm (VCR, 0dBm=0.775Vrms) -12dBm/ 1k ohm (DVD, -20dBFs 0dBFs=2.0Vrms)
			Digital Output Level	0.5 V p-p / 75 ohm(DVD)
			S/N Ratio at (Weighted)	90dB(DVD), 42dB(VCR at SP)
			Harmonic Distortion (1KHz) Typical	0.02% (DVD), 1.5% (VCR at SP)
			Frequency Response : DVD Mode at DVD	4 Hz - 22 KHz
			DVD Mode at VIDEO CD	4 Hz - 20 KHz
			DVD Mode at CD	4 Hz - 20 KHz
			VCR Mode at SP	100Hz - 10kHz
			VCR Mode at LP	-
			VCR Mode at SLP	100Hz - 4kHz
		Hi-Fi Audio Signal	Dynamic Range : More than	90dB
			Frequency Response	20Hz ~20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	0.01

GENERAL SPECIFICATIONS

G-10	On Screen Display (DVD)	Menu			Yes
			Menu Type		Character
			Language		Yes
				Menu	Yes
				Sub Title	Yes
				Audio	Yes
			Picture		Yes
				TV Screen Size	Yes
				Display On/Off	Yes
				JPEG Interval	Yes
				Select Files	Yes
			Sound		Yes
				DRC (Dynamic Range Control)	Yes
				dts Decode	No
				Output (5.1ch/2ch)	No
				Surround On/Off	No
				Center On/Off	No
				Sub Woofer On/Off	No
			Parental		Yes
				Password Lock/Unlock	Yes
				Rating Level	Yes
			Other		Yes
				OSD Language (Set up Language)	Yes
				Output (RGB/Composite)	No
			Open		Yes
			Close		Yes
			No disc		Yes
			Reading		Yes
			Play		Yes
			Still/Pause		Yes
			Stop		Yes
			Prohibit Mark		Yes
			Step		Yes
			Skip (>>|)		Yes
			Skip (|<<)		Yes
			Random		Yes (CD, VIDEO CD, MP3, WMA, JPEG)
			Repeat		Yes
			Slow+ ##		Yes
			Slow- ##		No
			Search+ ##		Yes
			Search- ##		Yes
			Jump		Yes
			Resume		Yes
			Title No.		Yes
			Chapter No.		Yes
			Track No.		Yes
			Time		Yes
			Sub Title No.		Yes
			Angle No.		Yes
			Vocal On/Off		Yes
			Audio No.		Yes
			Audio Stereo L/R		Yes (VIDEO CD)
			Zoom		Yes
			Marker No.		Yes
			Spatializer (N-2-2)		Yes
			Program Play Back		Yes (CD, VIDEO CD, MP3, WMA, JPEG)
			MP3/WMA/JPEG	Folder Name	Yes
				File Name	Yes
				File No	Yes
				Time	Yes
				Track No	Yes
			Progressive Scan Out ON/OFF		No

GENERAL SPECIFICATIONS

	On Screen Display(VCR)	Menu			Yes
			Menu Type		Character
			Timer Rec Set		Yes
			Auto Repeat On/Off		Yes
			SAP On/Off		Yes
			CH Set-Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/Delete	Yes
			System Set Up		Yes
				Clock Set	Yes (Calendar 12H)
				Language	Yes
				No Noise Back Ground	Yes
				Auto Clock	Yes
				Standard Time	Yes
				Daylight Saving Time	Yes
		G-CODE (or SHOWVIEW or PLUSCODE) No. Entry			No
		Stereo, Audio Output, SAP			Yes
		Play/Stop/FF/Rew/Rec/OTR(ITR)/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes
				CH/AV (LINE)	Yes
				Clock	Yes
				Repeat	Yes
				Tape Counter	Yes
				Index	Yes
				Tape Speed	Yes
				ATR / Manual Tracking	Yes
				Hi-Fi	Yes
				Zero Return	Yes
G-11	**OSD Language**		DVD OSD		English French Spanish
			VCR OSD		English French Spanish
G-12	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31
		Timer Events			8 Program/ 1 Month
		One Touch Recording Max Time			6 Hours
		OTPB Valid Time			No
		Timer Back-up (at Power Off Mode)			5 sec
G-13	**Display**	DISPLAY			Yes
				DISPLAY type	LED Module (Amber, "Rec" &Timer symbol = Red)
				Clock/Counter,CH,Timer Rec,OTR, Play Rec,FF(Cue),Rew(Rev),Stop,ATR,Eject	No
				VCR	Yes
				DVD	Yes
				CD	Yes
				Clock	Yes (12h)
				AM	No
				PM	Yes
				Counter VCR	Yes (hour:min)
				DVD	Yes (hour:min)
				CD	Yes (min:sec)
				Eject	Yes
				Counter Remain	No
				Play	Yes
				Stop	No
				Rec	Yes
				FF / Cue	No
				REW /Review	No
				Pause/Still	Yes
				OTR	No
				T-Rec	Yes
				Chapter	No
				TITLE	No
				TRACK	Yes
				Repeat	No
				Hi-Fi	No
				SP	No
				LP	No
				SLP	No
				CH	Yes
				RF Output CH	Yes
				Tape In	Yes
				Remocon Custom Code	No
				Progressive Scan Out	No

GENERAL SPECIFICATIONS

G-14	**Remote Control**	Unit		RC-HL
		Glow in Dark Remocon		No
		Format		NEC (TOSHIBA)
		Custom Code		45-BA
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		46 Key
		Keys	Power	Yes
			DISPLAY/CALL	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Input Select	Yes
			Input Select / PROGRESSIVE	No
			UP/ SET+ / TRACKING+	Yes
			DOWN/ SET- / TRACKING-	Yes
			LEFT/CH-	Yes
			RIGHT/CH+	Yes
			VCR/DVD	Yes
			TV/VCR	Yes
			DVD MENU	Yes
			TITLE	Yes
			SETUP MENU/VCR MENU	Yes
			SELECT/ENTER	Yes
			CLEAR/CANCEL	Yes
			RETURN	Yes
			PLAY	Yes
			STOP	Yes
			PAUSE/STILL/STEP	Yes
			FF(Cue)/SEARCH+	Yes
			REW(Review)/SEARCH-	Yes
			REC/OTR	Yes
			SKIP+ / INDEX+	Yes
			SKIP- / INDEX-	Yes
			AUDIO / AUDIO SELECT	Yes
			ANGLE/COUNTER RESET	Yes
			SUB TITLE/ATR	Yes
			PLAY MODE/SPEED	Yes
			T-REC	Yes
			CLOCK / COUNTER	Yes
			JUMP/ZERO RETURN	Yes
			ZOOM/CM SKIP	Yes
			REPEAT A-B	Yes
			SLOW(Forward)	Yes
			MARKER	Yes
			OPEN/CLOSE	Yes
			EJECT	Yes

GENERAL SPECIFICATIONS

G-15	**Features (DVD)**	Auto Power Off		No
		Parental Lock		Yes
		Video CD Playback		Yes
		MP3 Playback		Yes
		WMA Playback		Yes
		JPEG Playback		Yes
		Progressive Scan Out		No
		Digital Out	Dolby Digital	Yes
			MPEG	Yes
			PCM	Yes
			DTS	Yes
		Down Mix Out	(Dolby Digital)	Yes
			(DTS)	No
		Spatializer (N-2-2)		Yes
		Screen Saver		No
		Auto Stop		Yes (5min)
		Tray Lock		Yes
		Audio DAC		192kHz / 24bit
	Features (VCR)	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		Auto Power Off		No
		Forward/Reverse Picture Search		Yes
		VIDEO PLUS+ (SHOWVIEW, G-CODE)		No
		One Touch Playback		No
		Auto CH Memory		Yes
		AREA CODE		No
		Auto Clock Set		Yes
		Index Search		Yes
		SQPB (Option)		Yes
		CATV		Yes
		Energy Star		No
		MTS (SAP)		Yes
		CM Skip (30sec x 6 Times)		Yes
		Copy Disc to Tape		Yes (by Conditioning)
G-16	**Accessories**	Owner's Manual	Language	English
			w/Guarantee Card	Yes
			Buyer Model No.	SD-K220S
		Remote Control Unit		Yes
		Guarantee Card		No
		Registration Card		Yes
		Warning Sheet		No
		Service Station List		No
		Important Tag		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes (Spanish)
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
		AC Cord		No
		AV Cord (1.2m)		Yes
		75 Ohm Coaxial Cable (0.9m)		Yes
		S-Video Cable		No
		21pin cable		No
		800 No Sticker		No
		Toll Free Insert Sheet		No
		Safety Tip		No
		Sheet Information (Return)		Yes[From '03 JUN O/R]

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Power	Yes
				Play	Yes
				Eject (VCR)	Yes
				Stop	Yes
				Rec/OTR	Yes
				Open/Close (DVD)	Yes
				CH +	Yes
				CH -	Yes
				FF/ Search(>>)	Yes
				Rew/Search(<<)	Yes
				Still/Pause	No
				Shuttle (Search/REV/FWD)	No
				DVD/VCR	Yes
				Main Power SW	No
			Rear	Attenuator	No
				S-Video/Component Video Selector	Yes
				RF Out (Slide SW)	No
				Main Power SW	No
		Volume		Phones Volume	No
				Mic Volume	No
				Echo Volume	No
				Rec/OTR	No
		Terminals	Front	Video In	RCA x 1 (Black)
				Audio In	RCA x 2 (Stereo, Black)
			Rear	Video Output	RCA x1 (Yellow) S-Video x 1 (DVD Signal Only) Component x1 (RCA 3pin, DVD Signal Only)
				Audio Output	RCA x 4(Stereo, Red/White) Coaxial x 1 (Digital Audio, DVD Signal Only)
				Optical Out (Option)	Yes (Digital Audio, DVD Signal Only)
				Video Input (Option)	RCA x 1 (Yellow)
				Audio Input (Option)	RCA x 2 (Stereo,Red/White)
				RF Input / Output	Yes
				Euro Scart	No
				AC Inlet	No
		Indicator	LED	Power	No
				Rec	No
				T-Rec	No
				TV/VCR	No
				DVD	Yes (GREEN)
				VCR	Yes (GREEN)
				Surround	No
				Level Meter	No
G-18	**Set Size**			Approx. W x D x H (mm)	430 x 251.5 x 99
G-19	**Weight**			Net (Approx.)	3.6kg (7.9lbs)
				Gross (Approx.)	4.7kg (10.4lbs)
G-20	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box		Yes
				Material	Single / Full Color Carton
				W/Color Photo Label	No
				Dimensions W x D x H(mm)	497 x 360 x 180
				Design	As Per BUYER 's
				Description of Origin	Yes
				Buyer Model No.	SD-K220S
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	80 cm
			Container Stuffing		1,985 Sets/40' container
G-21	**Cabinet Material**		Cabinet	Front	PS 94V2 or More / DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	No
G-22	**Environment**		Pb Free	Lead-free Solder	No
				Other	No
			Cd Free		No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET, FRONT CABINET AND OPERATION 1/2 PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connectors: (CP651 and CP652).
4. Unlock the 8 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 9 screws ③.
7. Remove the Operation 1/2 PCB in the direction of arrow (C).
8. Remove the 3 Pin Shield.

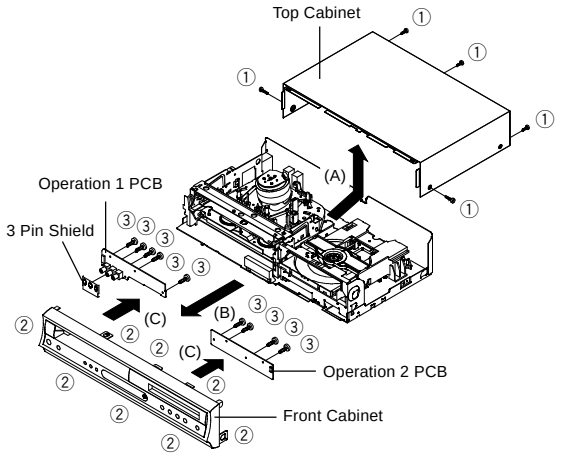


Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90˚ and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

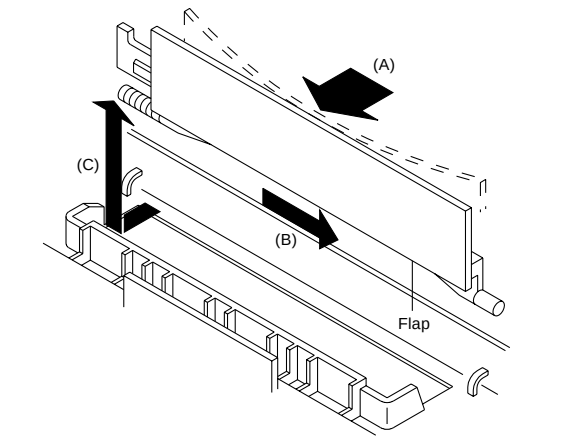


Fig. 1-2

1-3: DVD DECK (Refer to Fig. 1-3)

1. Make the short circuit on the position as shown **Fig. 1-3** using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Unlock the support ① and remove the Deck Top Holder in the direction of arrow (A).
3. Remove the 3 screws ②.
4. Remove the screw ③.
5. Disconnect the following connectors: (CP2601, CP2602 and CP2603).
6. Remove the DVD Deck in the direction of arrow (B).
7. Remove the 3 screws ④.
8. Remove the Front Angle in the direction of arrow (C).
9. Remove the screw ⑤.
10. Remove the DVD Angle.

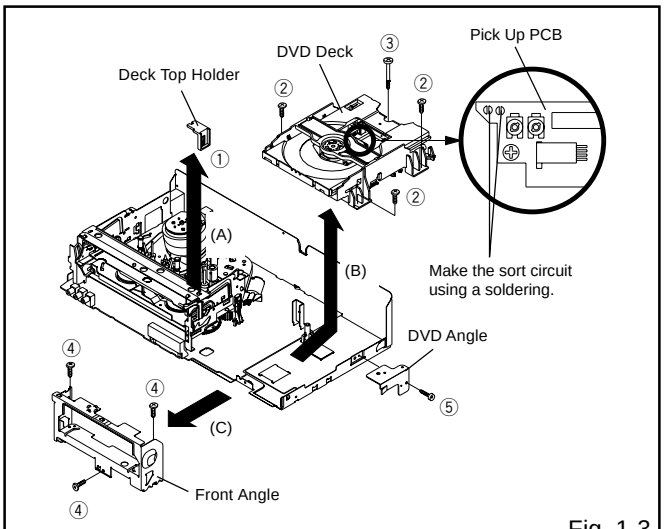


Fig. 1-3

NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

DISASSEMBLY INSTRUCTIONS

1-4: DVD PCB (Refer to Fig. 1-4)

1. Remove the 3 screws ①.
2. Remove the 4 screws ②.
3. Disconnect the following connectors:
   (CP4002 and CP8102).
4. Remove the DVD PCB in the direction of arrow.

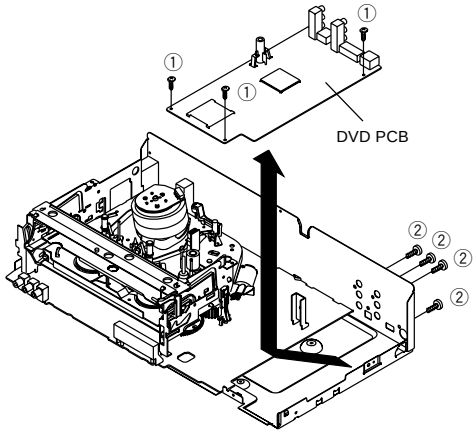


Fig. 1-4

1-5: VCR DECK (Refer to Fig. 1-5)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the screw ①.
3. Remove the FE Head.
4. Remove the 3 screws ②.
5. Disconnect the following connectors:
   (CP101, CP102, and CP3001).
6. Remove the AC Head Cover and VCR Deck in the direction of arrow.

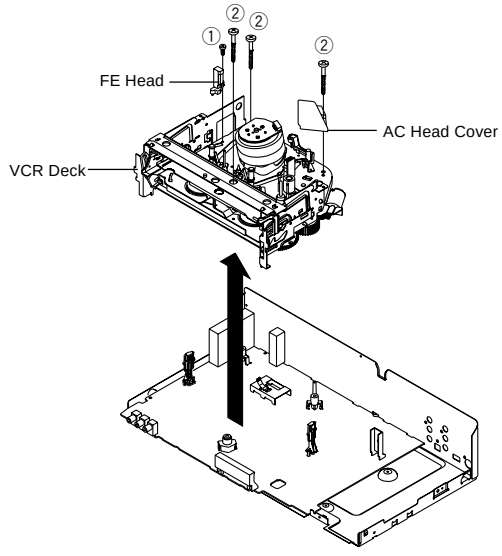


Fig. 1-5

1-6: VCR PCB (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the 2 screws ②.
3. Remove the screw ③.
4. Remove the VCR PCB in the direction of arrow.

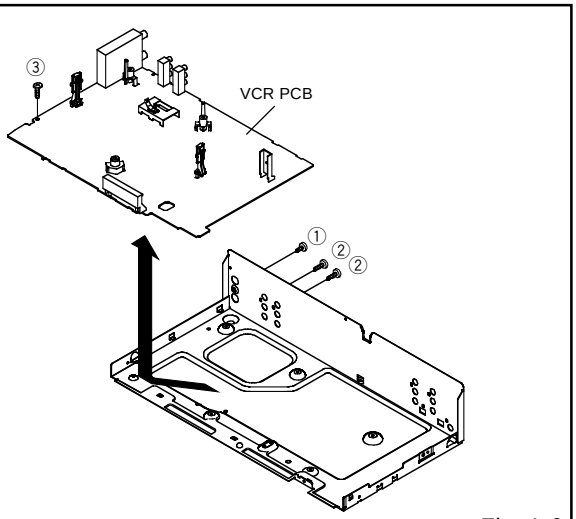


Fig. 1-6

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

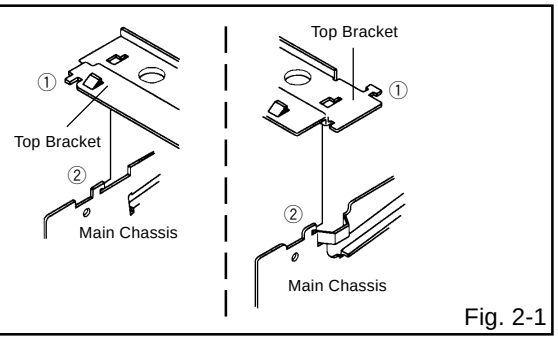


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

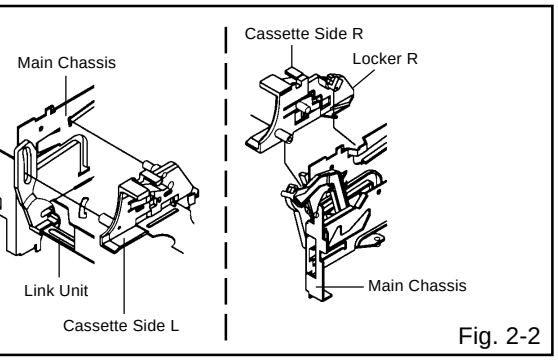


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

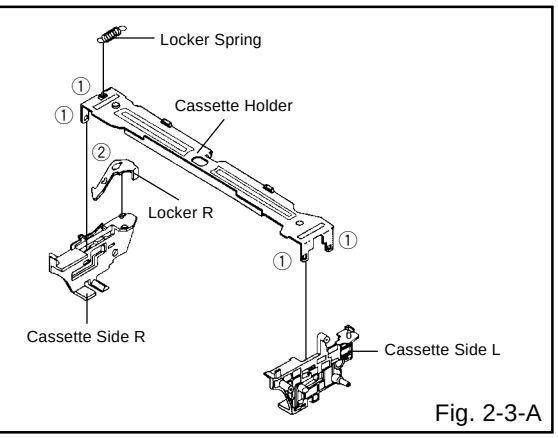


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

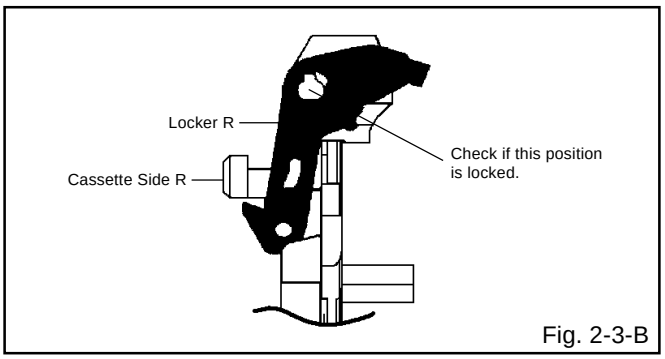


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

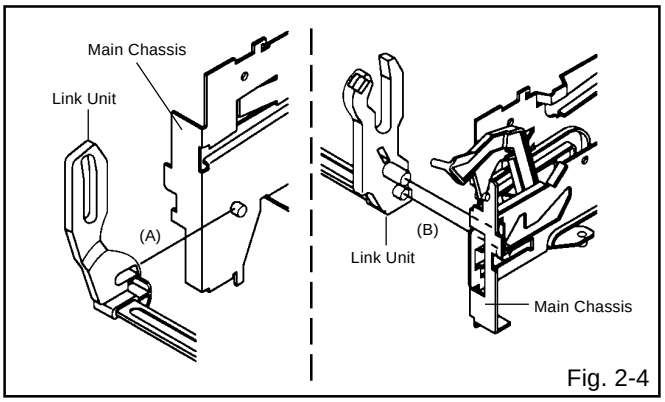


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

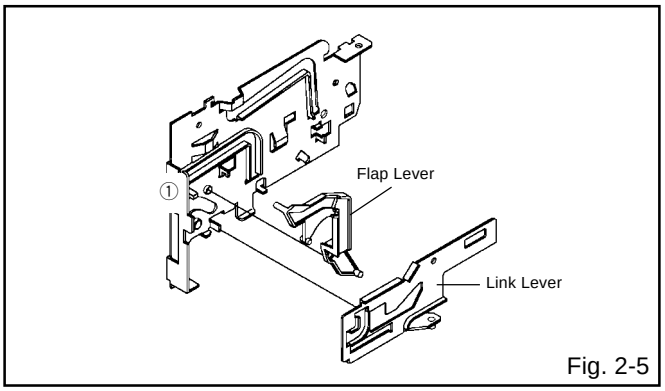


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

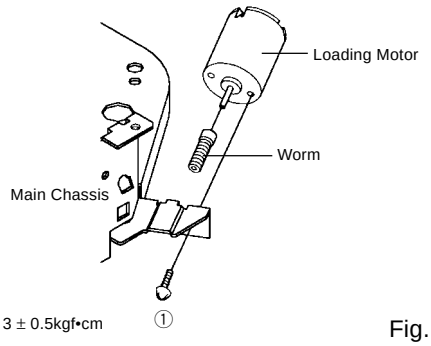


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

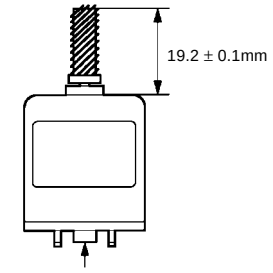


Fig. 2-6-B

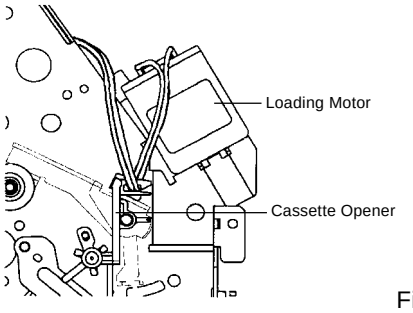


Fig. 2-6-C

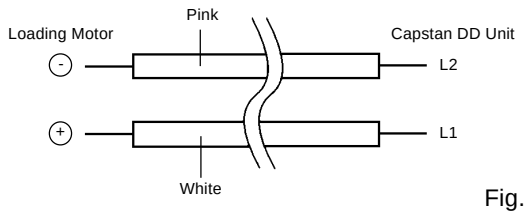


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

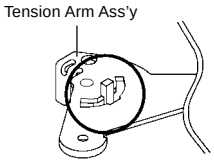


Fig. 2-7-A

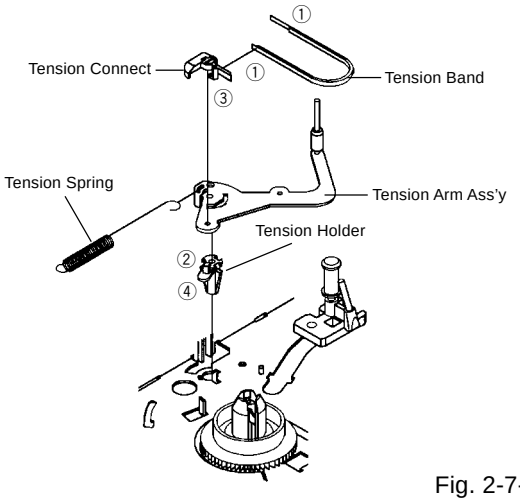


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

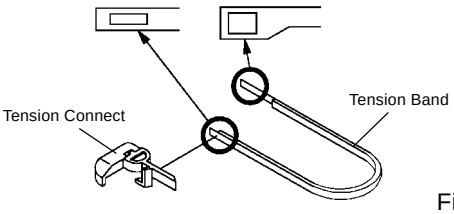


Fig. 2-7-C

DISASSEMBLY INSTRUCTIONS

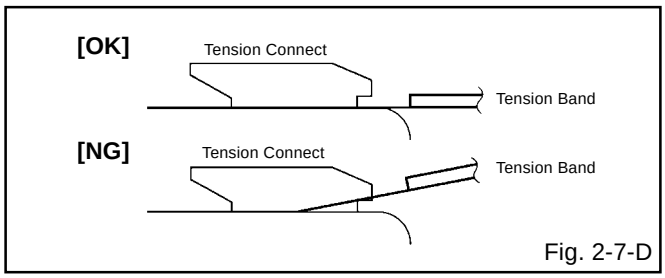


Fig. 2-7-D

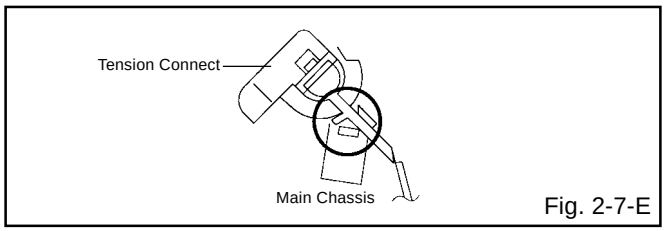


Fig. 2-7-E

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

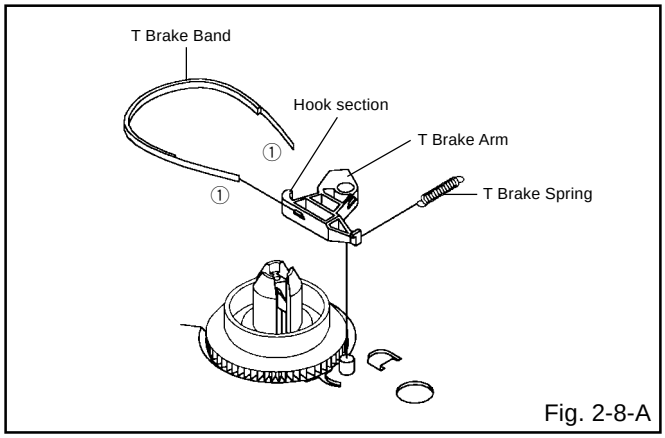


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

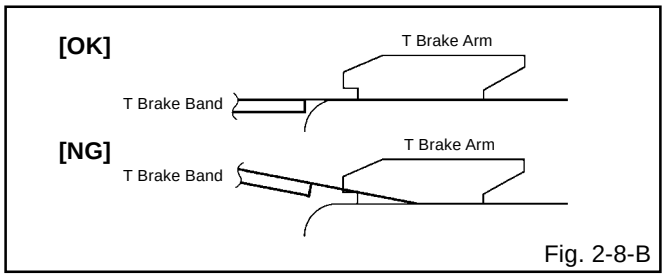


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

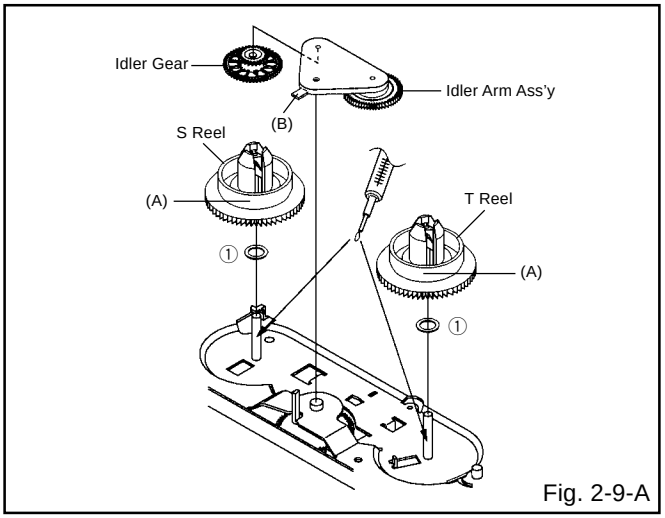


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

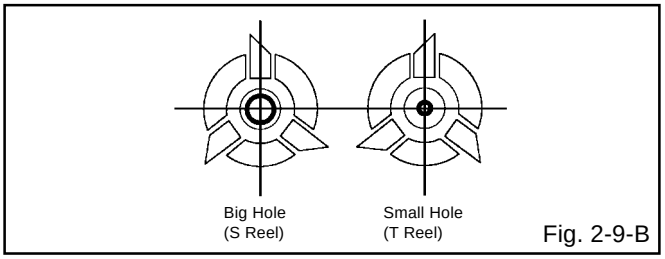


Fig. 2-9-B

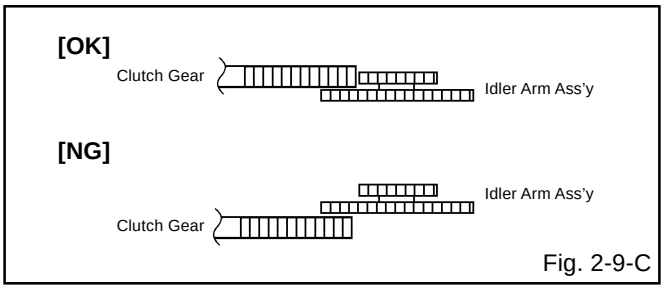


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

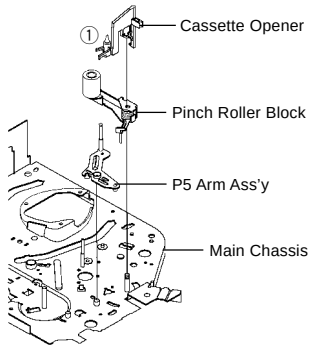


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

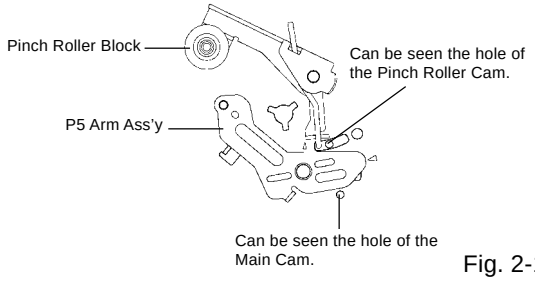


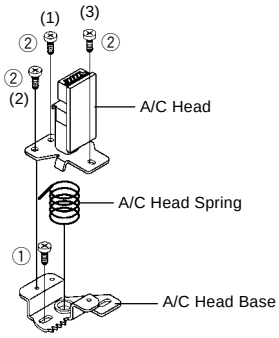
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

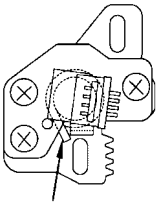
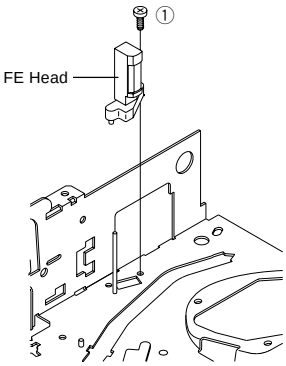


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

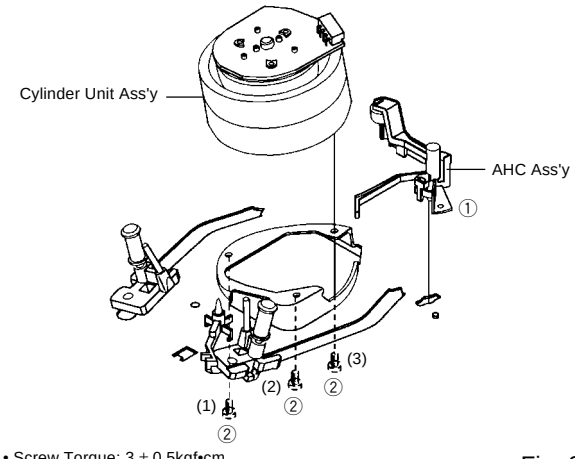
Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



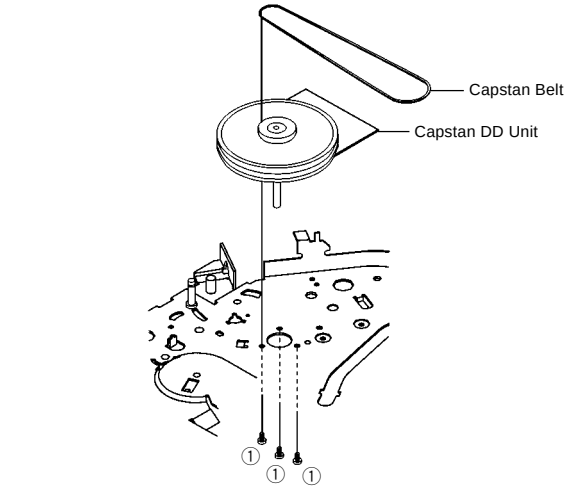
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

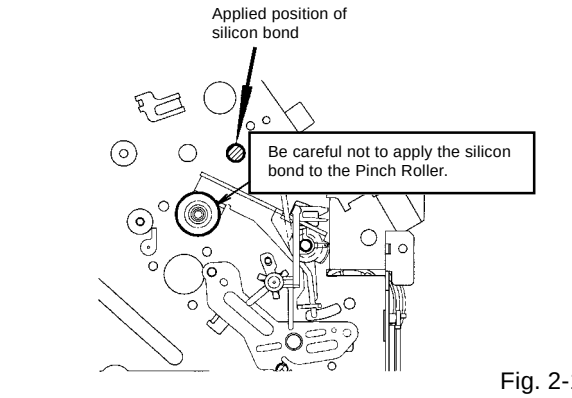


Fig. 2-14-B

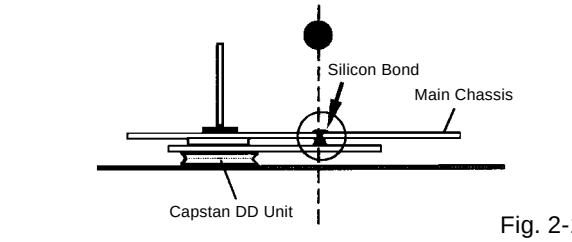


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

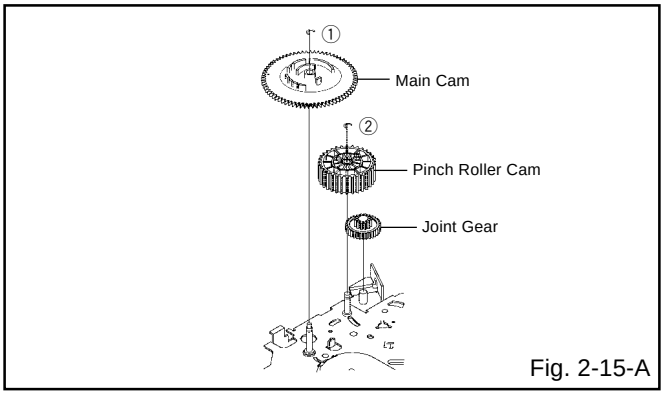


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

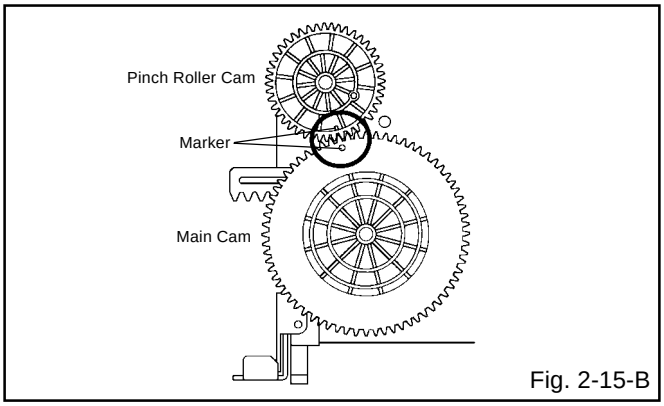


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

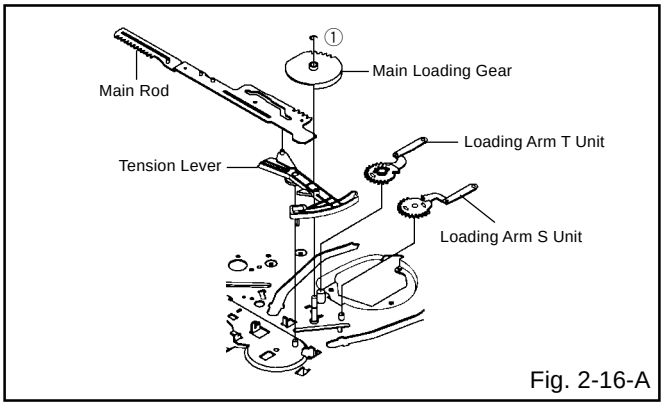


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

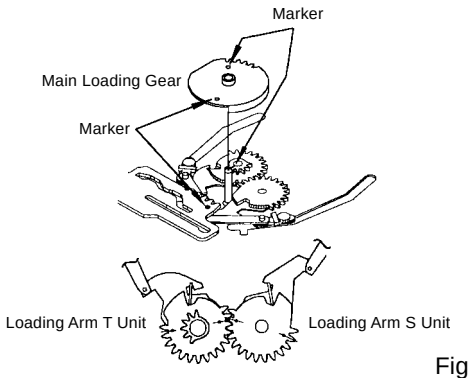


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

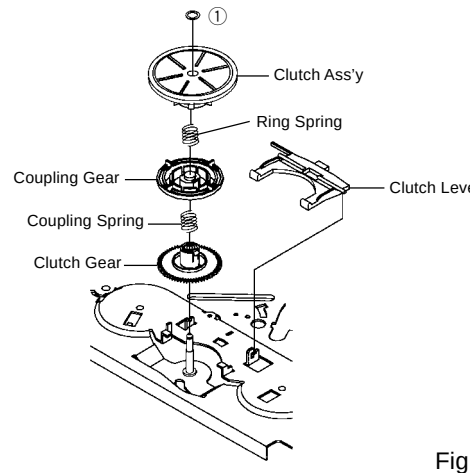


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

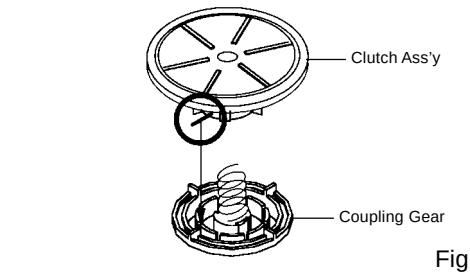


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

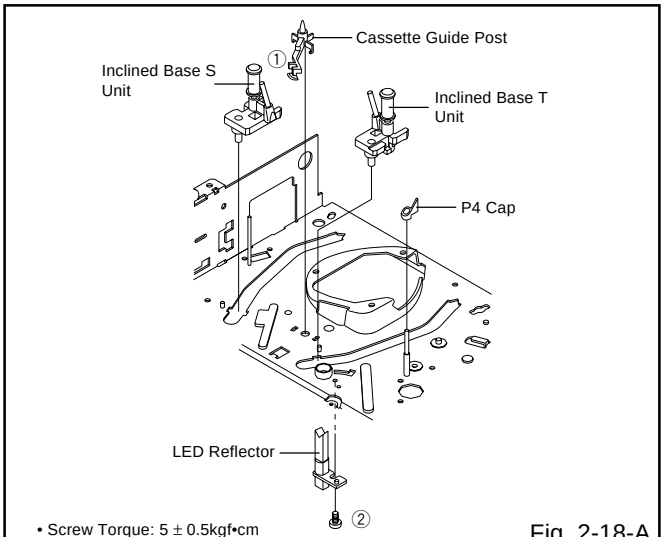


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

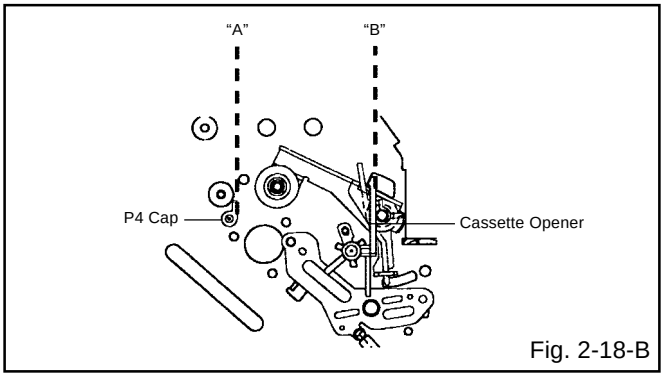


Fig. 2-18-B

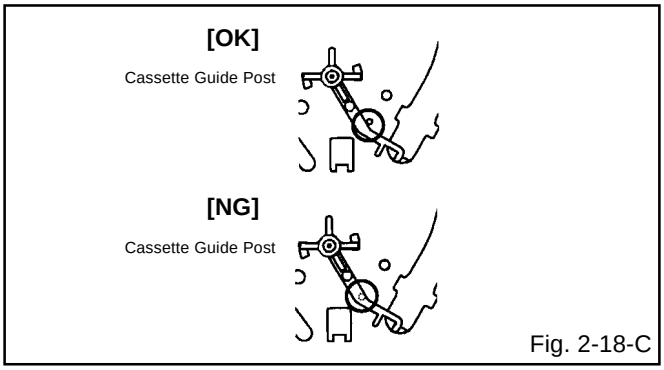


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the support ① and remove the Tray.

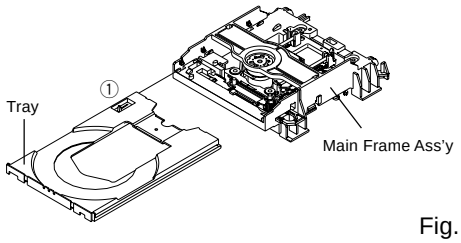


Fig. 3-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.

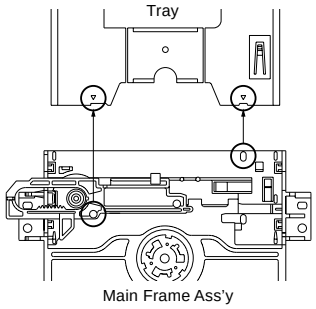


Fig. 3-1-B

3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2-A)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.

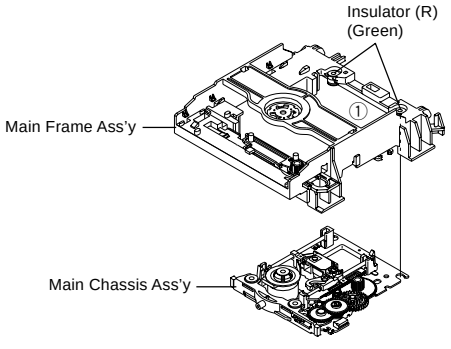


Fig. 3-2-A

NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (6) in order. **(Refer to Fig. 3-2-B)**

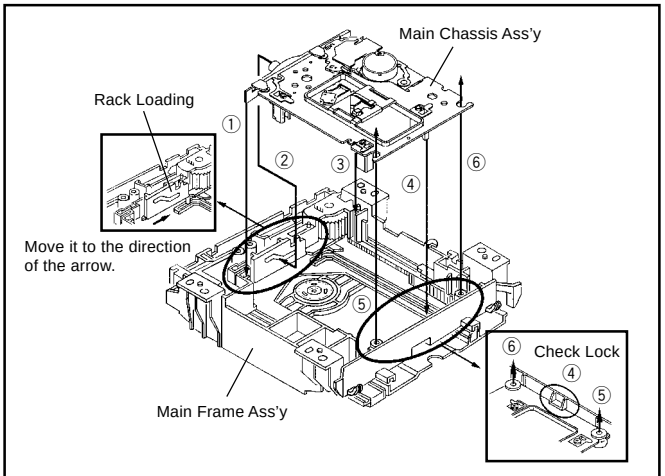


Fig. 3-2-B

3-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING/ RACK L SPRING (Refer to Fig. 3-3)

1. Remove the Rack L Spring.
2. Press down the catcher ① and slide the Rack Loading.
3. Remove the Rack Loading, Rack Loading Spring and Main Gear.

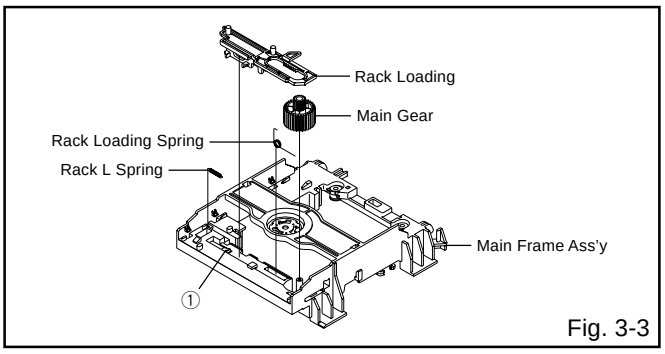


Fig. 3-3

3-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 3-4-A)

1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.

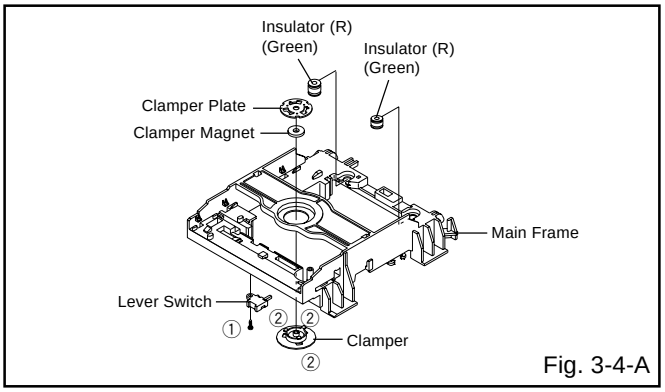


Fig. 3-4-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 3-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 3-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 3-4-D.

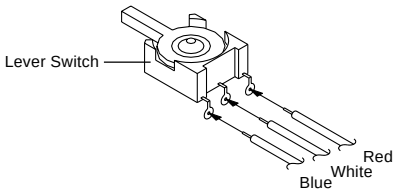


Fig. 3-4-B

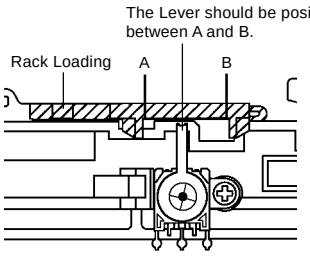


Fig. 3-4-C

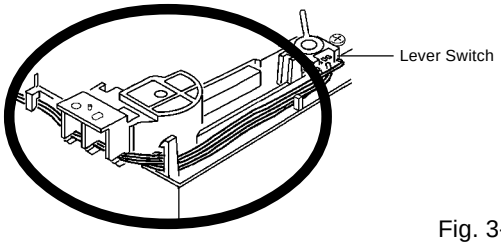


Fig. 3-4-D

3-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 3-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).

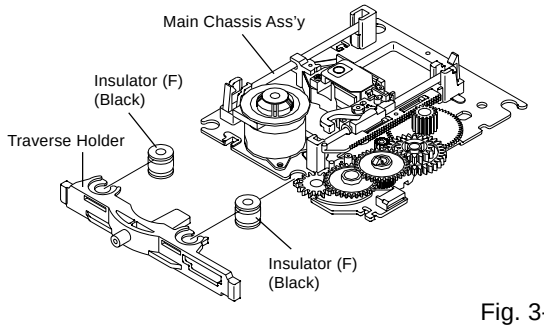


Fig. 3-5-A

NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 3-5-B.

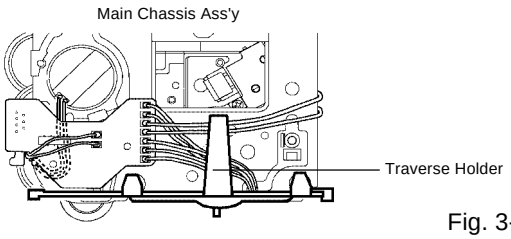


Fig. 3-5-B

3-6: SWITCH PCB ASS'Y (Refer to Fig. 3-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.

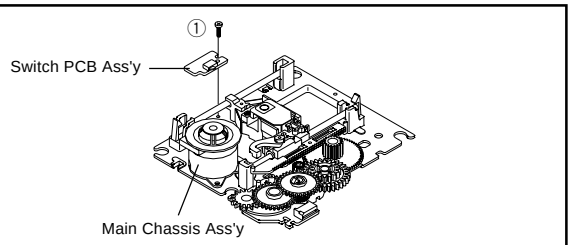


Fig. 3-6-A

NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 3-6-B.
2. When installing the wire of the Switch PCB, while pressing it in the direction of the arrow as shown Fig. 3-6-B, then instal it.

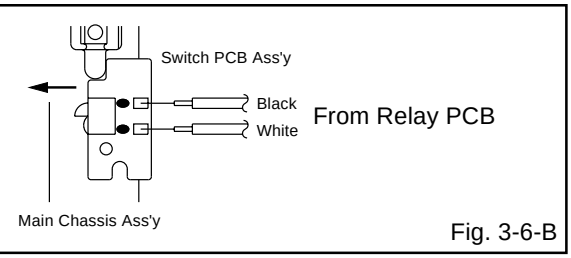


Fig. 3-6-B

3-7: RACK FEED ASS'Y (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1/2 Spring, Rack Feed 1/2 and Rack Feed Lever.

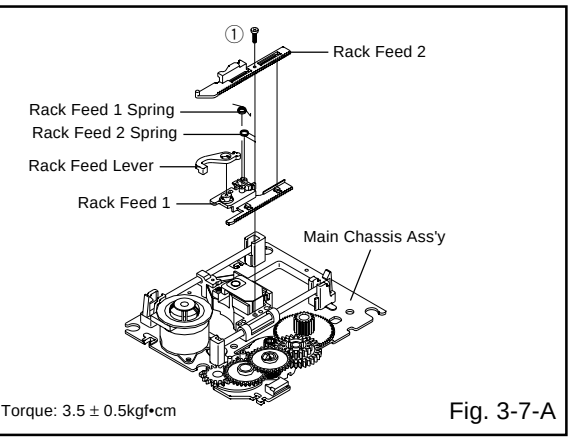


Fig. 3-7-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. **(Refer to Fig. 3-7-B)**
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 3-7-C.

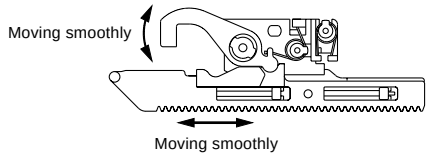


Fig. 3-7-B

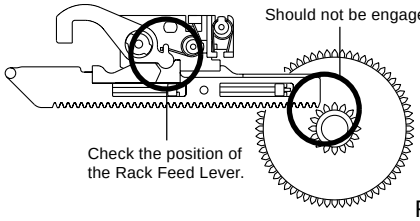


Fig. 3-7-C

3-8: RELAY PCB ASS'Y (Refer to Fig. 3-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

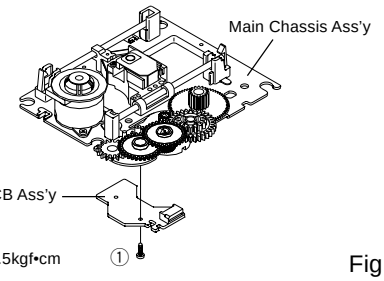


Fig. 3-8-A

NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 3-8-B.

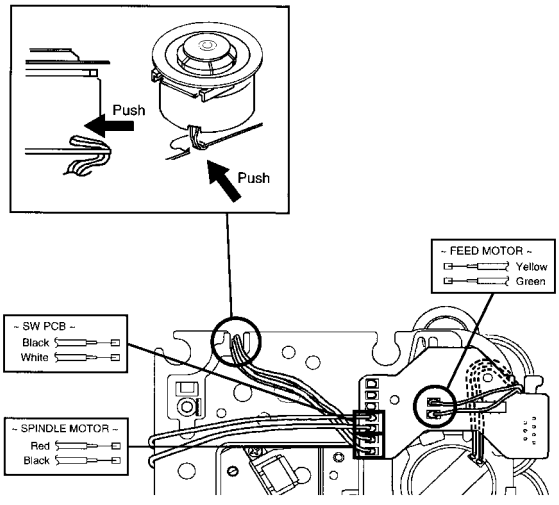


Fig. 3-8-B

3-9: GEAR (Refer to Fig. 3-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

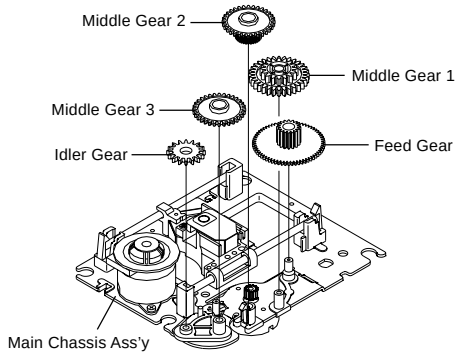


Fig. 3-9-A

NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 3-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 3-9-C.

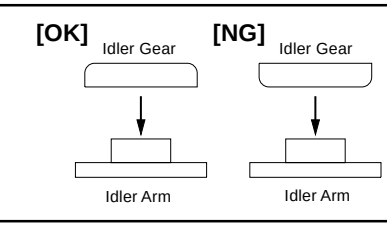


Fig. 3-9-B

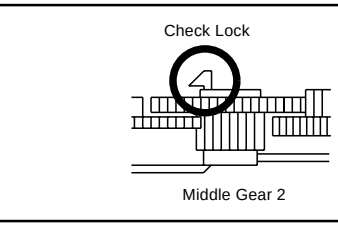


Fig. 3-9-C

3-10: IDLER ARM (Refer to Fig. 3-10-A)

1. Remove the Idler Arm Spring.
2. Remove the Chassis Spring.
3. Remove the Idler Arm.

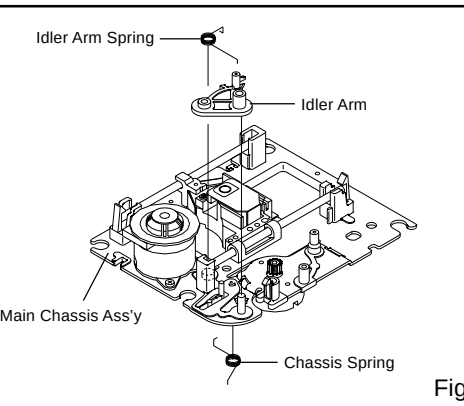


Fig. 3-10-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. In case of the Idler Arm installation, install as the circled section of Fig. 3-10-B.
2. In case of the Idler Arm Spring installation, install as the circled section of Fig. 3-10-C.
3. In case of the Chassis Spring installation, install as the circled section of Fig. 3-10-D.

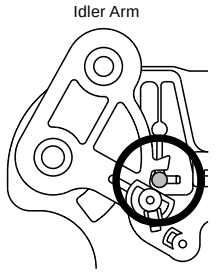


Fig. 3-10-B

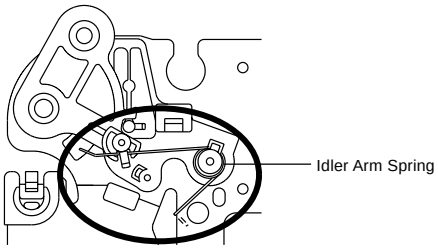


Fig. 3-10-C

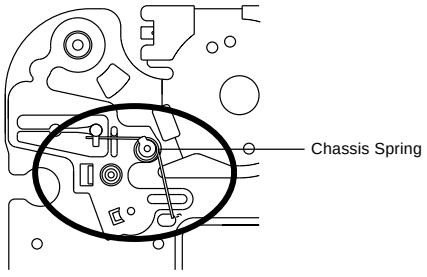
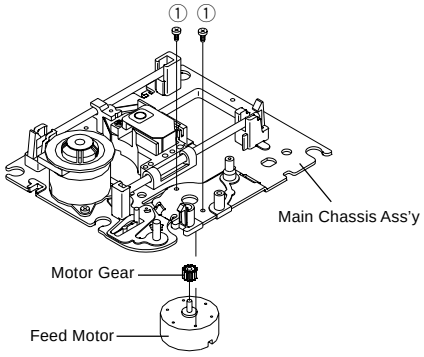


Fig. 3-10-D

3-11: FEED MOTOR (Refer to Fig. 3-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.



• Screw Torque: 1 ± 0.5kgf•cm

Fig. 3-11-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 3-11-C.

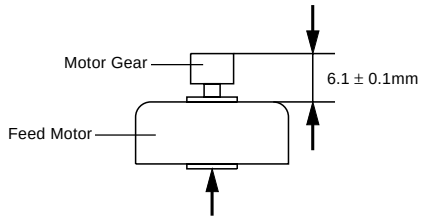


Fig. 3-11-B

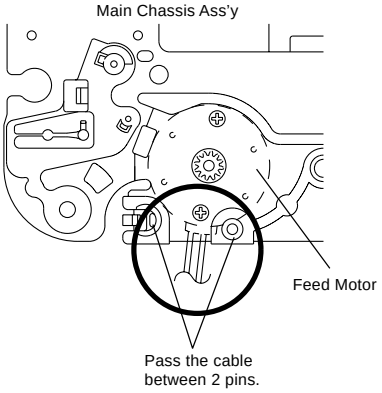


Fig. 3-11-C

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 4-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

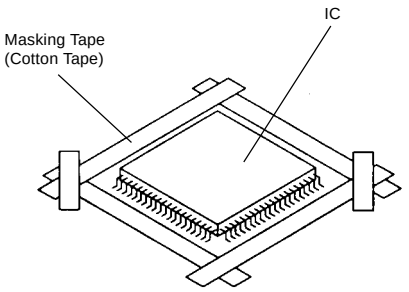


Fig. 4-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 4-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

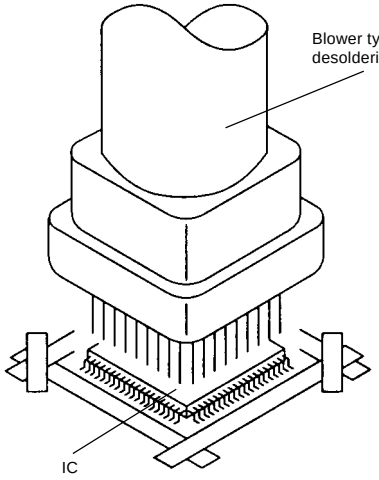


Fig. 4-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 4-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

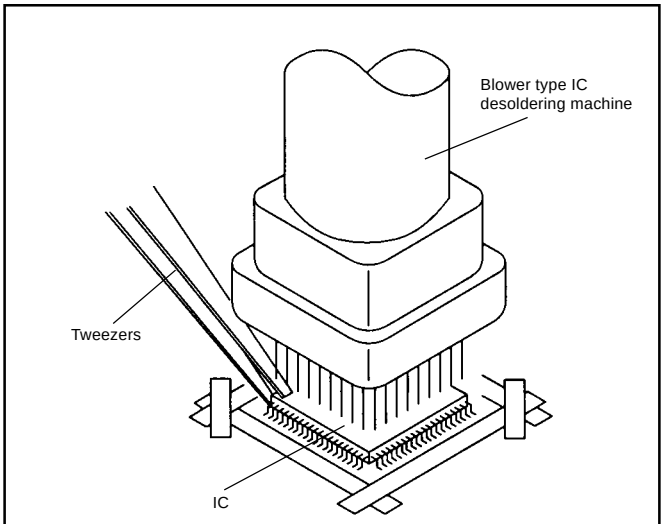


Fig. 4-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 4-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

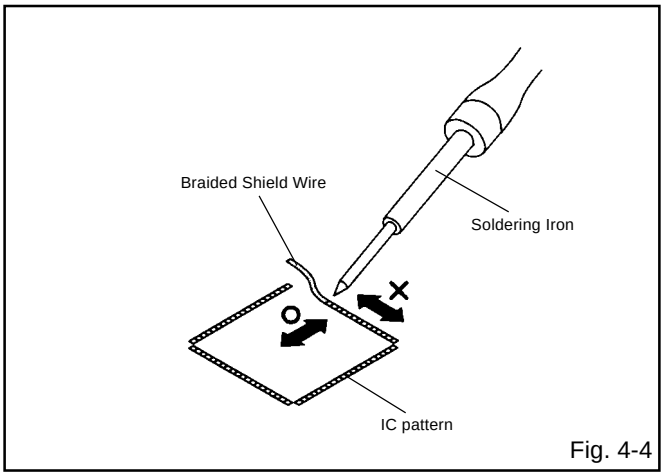


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**

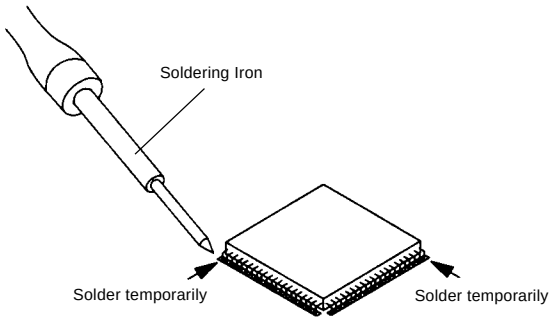


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**

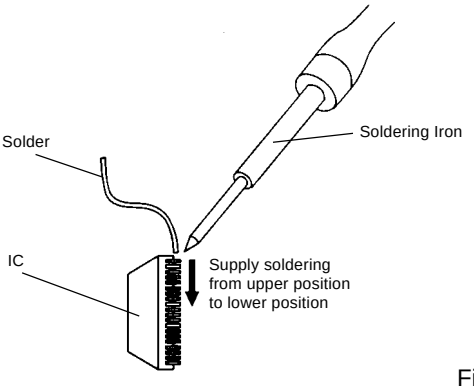


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

   NOTE

   Do not absorb the solder to excess.

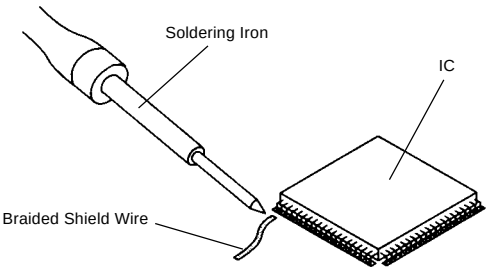


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**

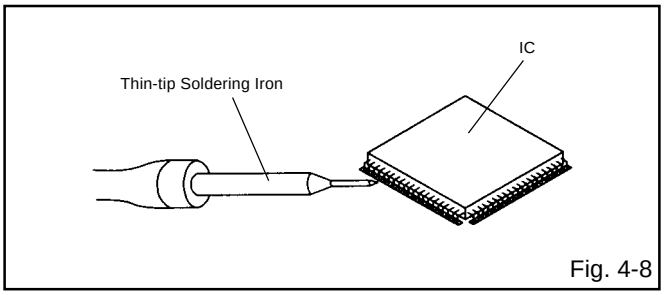


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time (second).

Set Key	Set Key	Standard Time (seconds)	Operations
CH UP	FF	2	PLAY/REC total hours are displayed on the screen. Refer to the “PREVENTIVE CHECKS AND SERVICE INTERVALS” (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the “WHEN REPLACING EEPROM (MEMORY) IC”.
CH UP	STOP	2	Adjust the PG SHIFTER automatically. Refer to the “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
CH UP	PLAY	2	Initialization of the factory on VCR. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
CH DOWN	POWER	2	VCR operation mode at no connection of DVD. Refer to the “PREPARATION FOR SERVICING” NOTE: Although the DVD is connected, the DVD mode cannot be selected.

Set Key	Remocon Key	Standard Time (seconds)	Operations
REC	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
REC	6	2	DVD Write mode. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	1	3	Check for the firmware version. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	7	3	Releasing of PARENTAL LOCK. Refer to the “PARENTAL CONTROL - RATING LEVEL”. NOTE: The function will only work without the setting of DVD disc at DVD mode.

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the “MECHANICAL ADJUSTMENT” (GUIDE ROLLER) and “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the “PREPARATION FOR SERVICING”

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

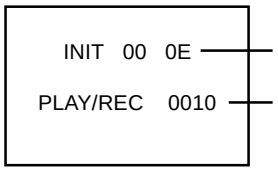
■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.



Initial setting content of MEMORY IC.

PLAY/REC total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

Fig. 1

PREVENTIVE CHECKS AND SERVICE INTERVALS

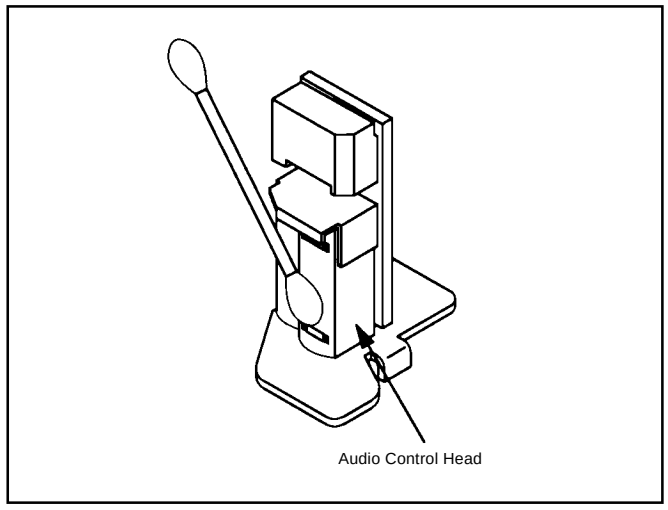
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

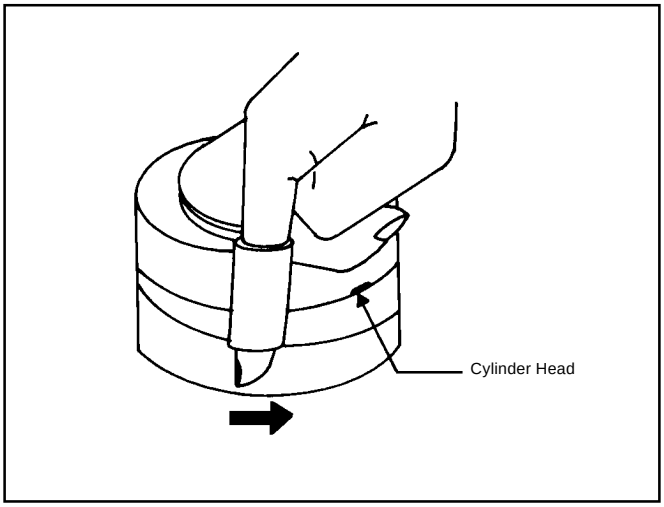
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.

2. Confirm that the “No Disc” will be appeared on the screen.

3. Open the DVD tray.

4. Press both Channel button **(6)** on the remote control and the REC button on the set for more than 2 seconds.

5. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
   When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

6. Place the Up-Date Disc and close the tray by hand. **(Refer to SERVICING FIXTURE AND TOOLS)**

7. Automatic read will start and "CD-R UPDATE PROCESS" will be displayed on the screen.
   At this time, the horizontal noise lines may appear. But no problem.

8. Approxi. 20 seconds later, the tray will open automatically. Remove the Up-Date Disc.

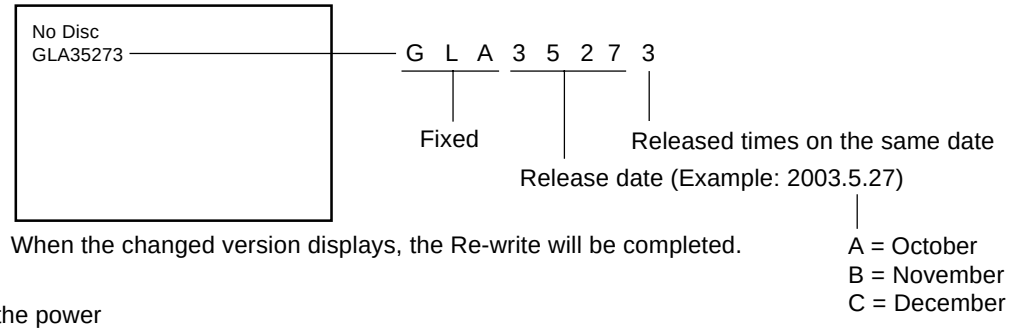
9. Then, Approxi. 40 seconds later, the above indication will disappear and the tray will close automatically.
   When the "No Disc" appears on the screen, the write will end.
   NOTE: Do not turn off the unit on the way or push the tray by hand to close it.
   Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.

10. Unplug the AC cord, then plug it in.

11. **After the write, set to the initializing of shipping.**
    Set to the DVD mode, press both Channel button **(4)** on the remote control and the REC button on the set for more than 2 seconds.

12. The "INITIALIZE 5 ---> COMPLETE" will appear on the screen.
    Then unplug the AC cord, and plug it in.

13. **CHECK FOR THE FIRMWARE VERSION**
    Set to the DVD mode, press both Channel button **(1)** on the remote control and the STOP button on the set for more than 3 seconds.
    Firmware version will be displayed on the top left of the screen.



When the changed version displays, the Re-write will be completed.

14. Turn off the power

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: INI 34 and INI 35 cannot be set. Because, the total time for the PLAY/REC of the main unit is recorded.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0E	D2	BE	60	64	64	4A	A6	0B	2B	86	32	8A	08	0A	0F
10	AF	97	95	8A	A0	90	31	04	88	A5	9F	3A	00	10	BF	00
20	3A	11	22	70	61	2A	3A	00	0B	00	00	E5	A2	B0	00	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   ADDRESS and DATA will appear on TV Monitor as **Fig 1**.

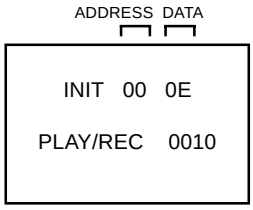


Fig. 1

4. ADDRESS is now selected and should “blink”. Using the SET + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will “blink”.
6. Again, step through the DATA using SET + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

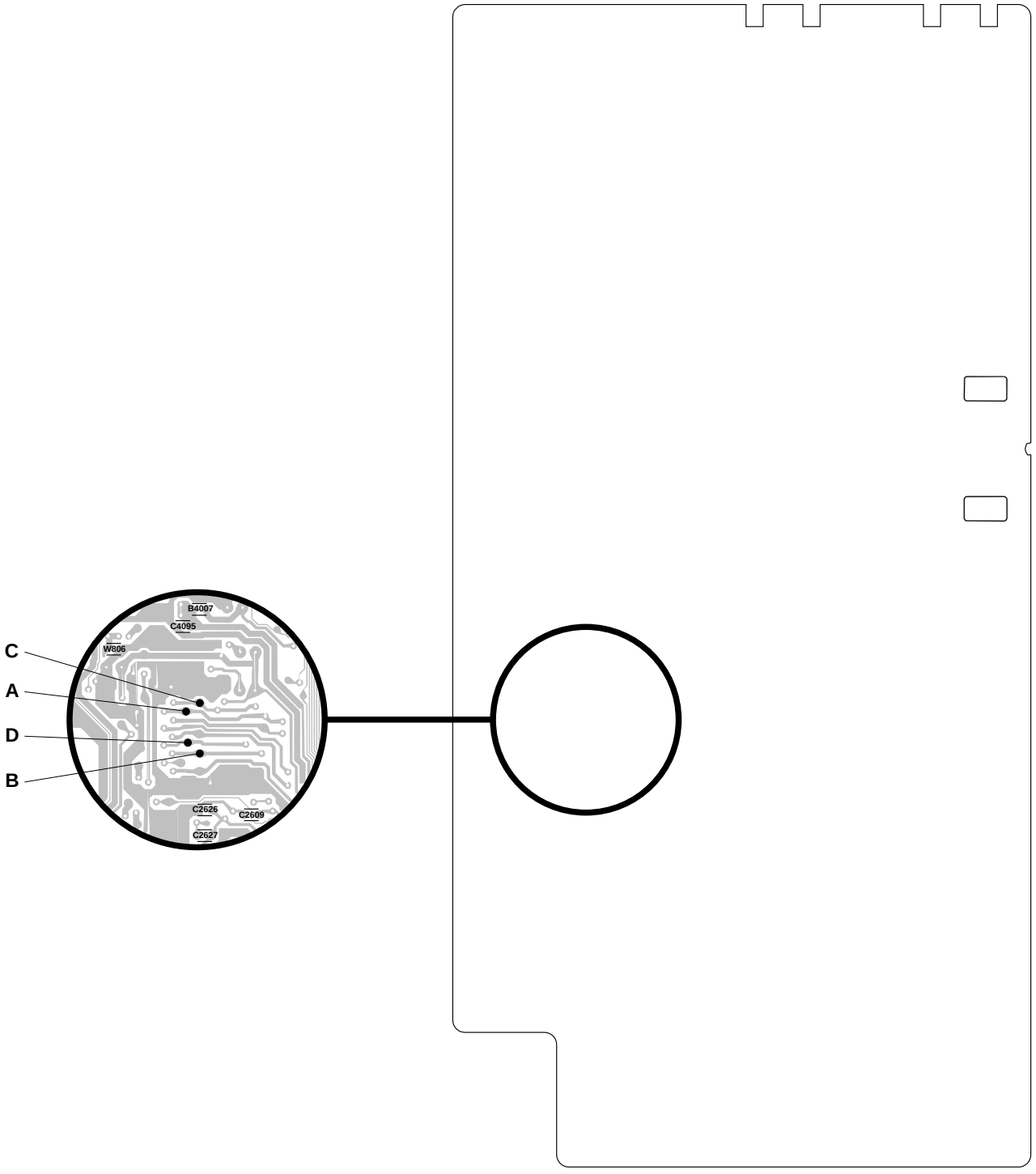
10. Turn POWER on.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

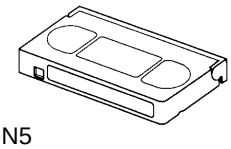
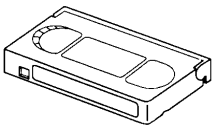
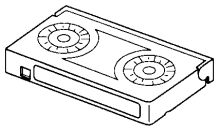
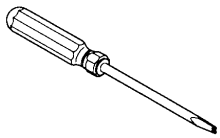
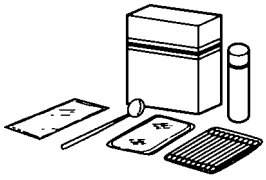
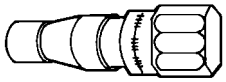
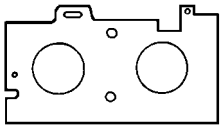
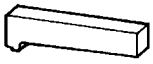
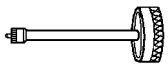
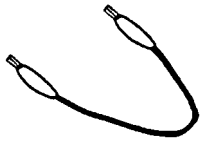
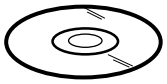
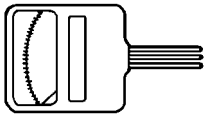
RF SIGNAL CHECK OF DVD PCB

RF signal check can be done at the following A~D resistance points on the DVD PCB.

DVD PCB (BOTTOM SIDE)



SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG176 Up-Date Disc 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG176	APJG176037	Up-Date Disc	Up-Date of the Firmware

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. While pressing the POWER button on the set for more than 2 seconds, press the CH DOWN button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.
2. Short circuit between **TP3001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

When you servicing with connection of DVD, perform the operations above step 2 to step 3.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

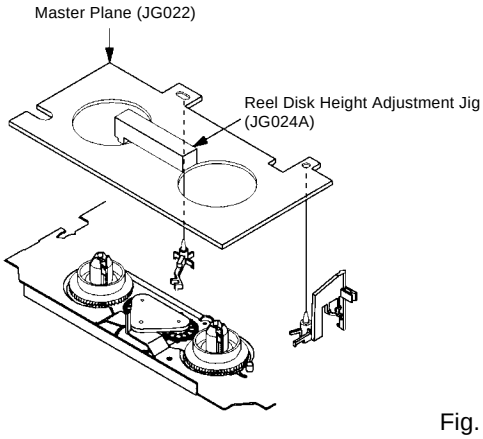


Fig. 1-1-A

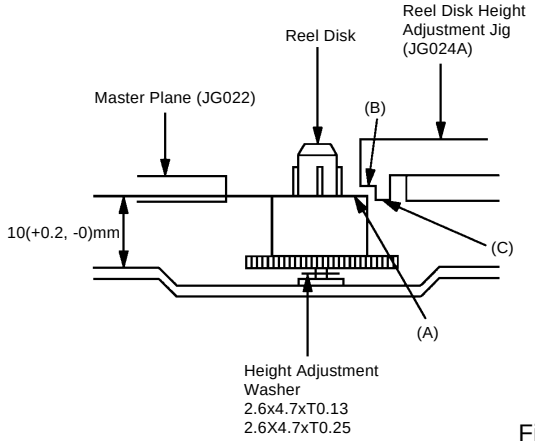


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

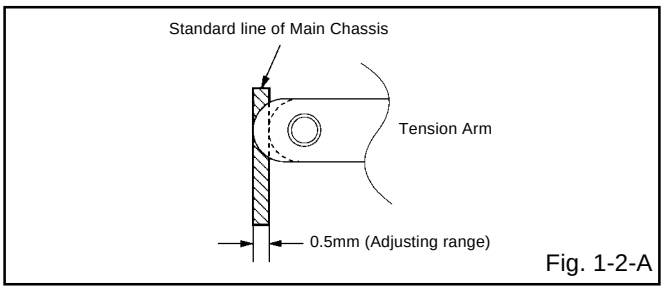


Fig. 1-2-A

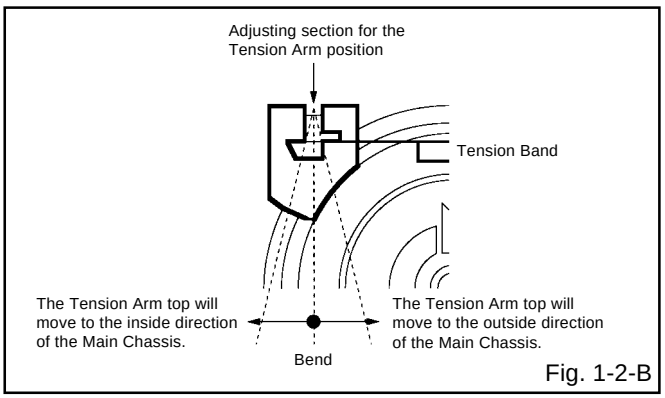


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

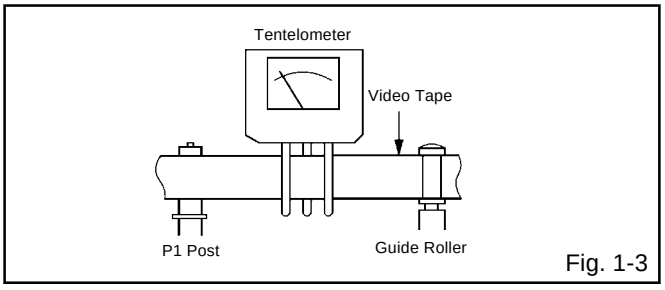


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

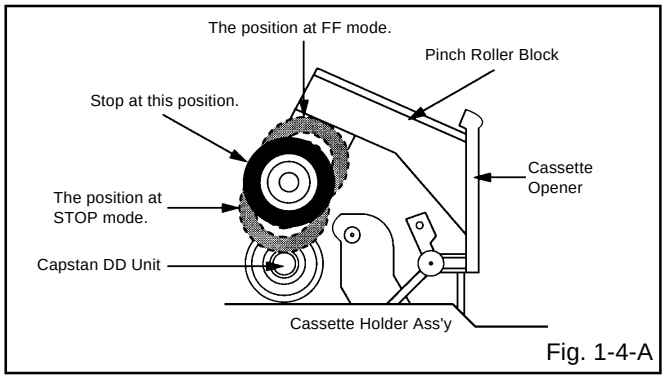


Fig. 1-4-A

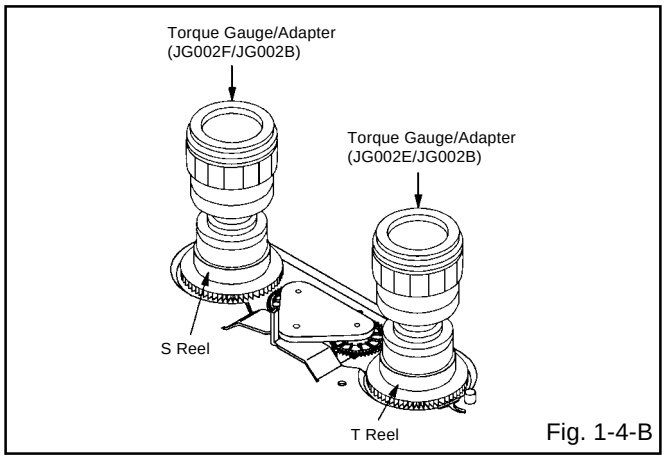


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Connect CH-1 of the oscilloscope to **TP101 (Envelope)** and CH-2 to **TP3002 (SW Pulse)**.
3. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
5. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
6. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

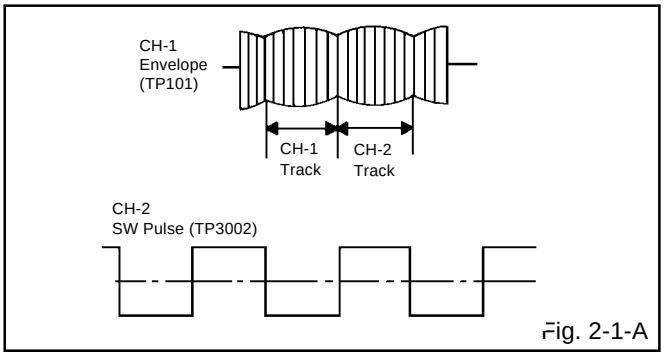


Fig. 2-1-A

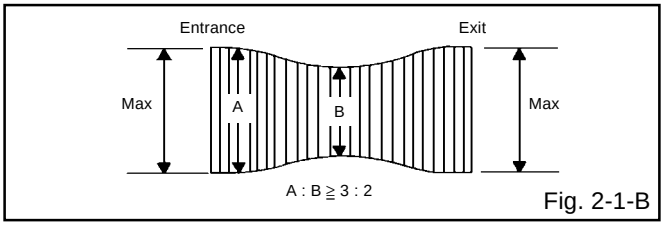


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

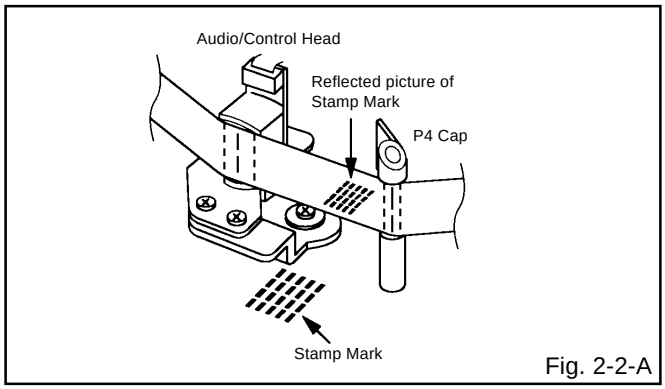


Fig. 2-2-A

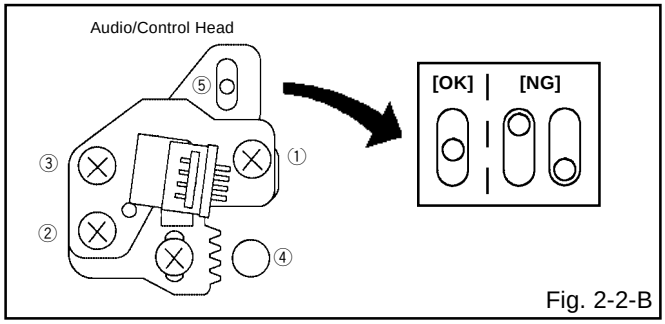


Fig. 2-2-B

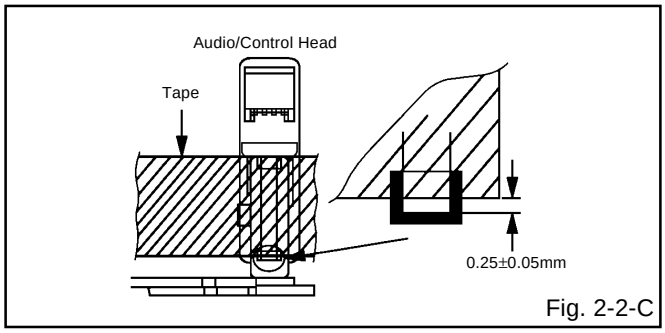


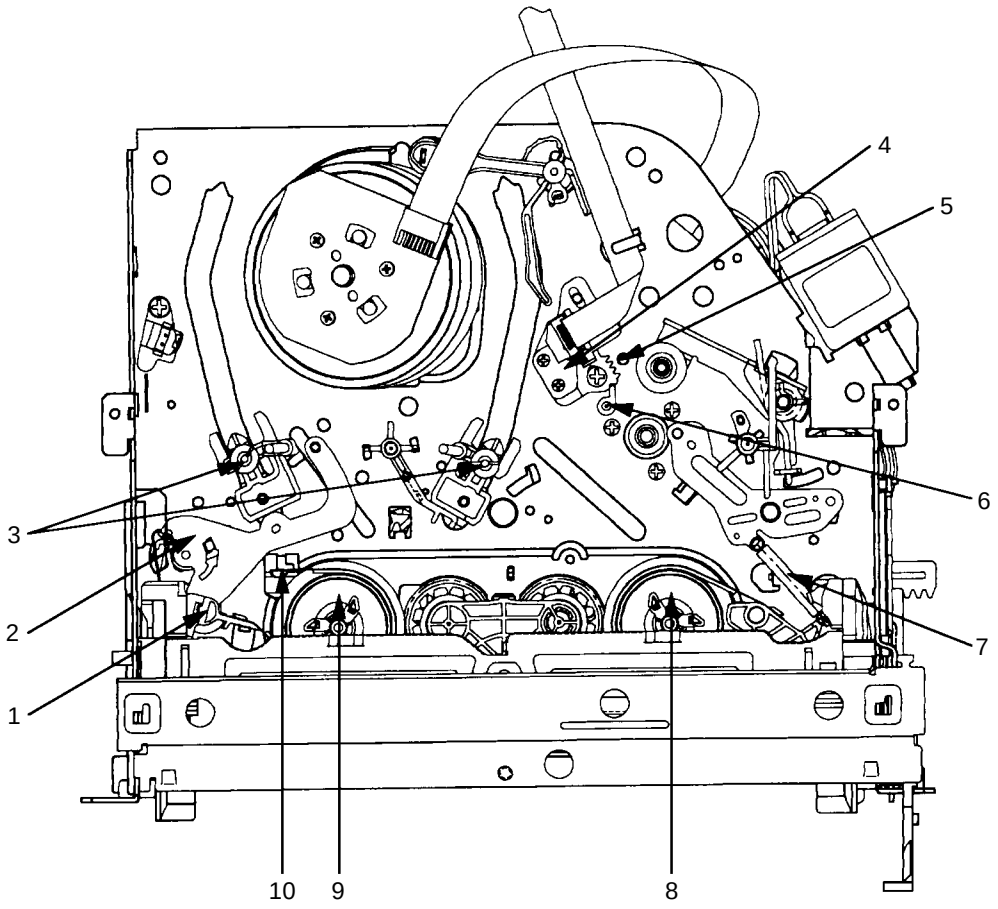
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP3002** and CH-2 to **TP101**.
6. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Then, check if the ⑤ section of **Fig. 2-2-B** is on the center position (or rather to the cylinder side). In case of the envelope maximum at the difference position from the center, adjust the matching of picture and sound again.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **TP8001**.
2. Playback the alignment tape.
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

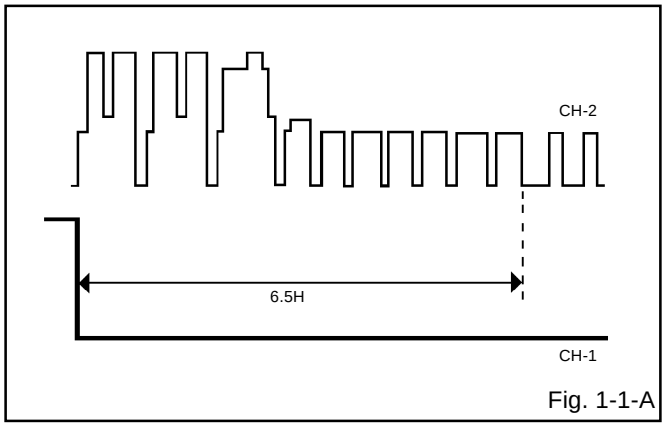


Fig. 1-1-A

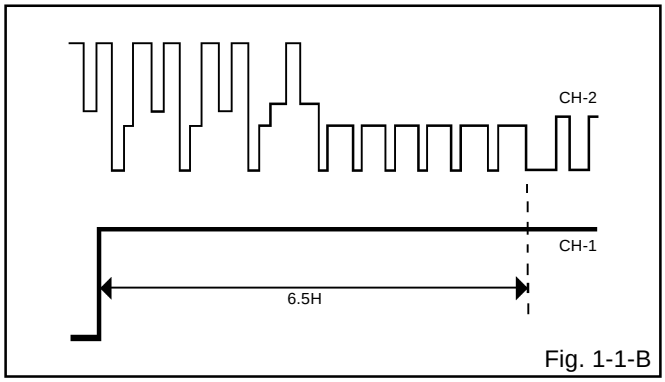
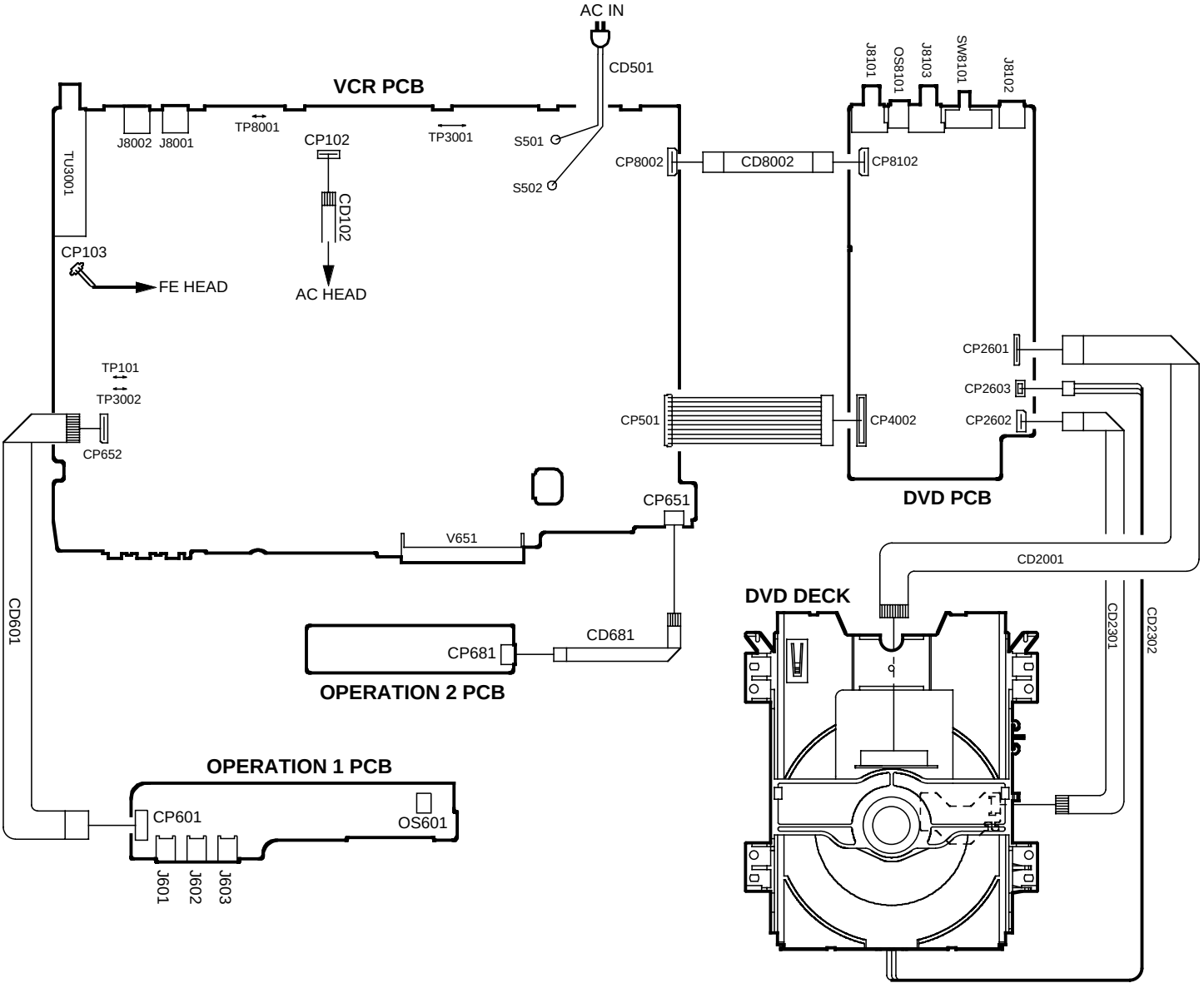


Fig. 1-1-B

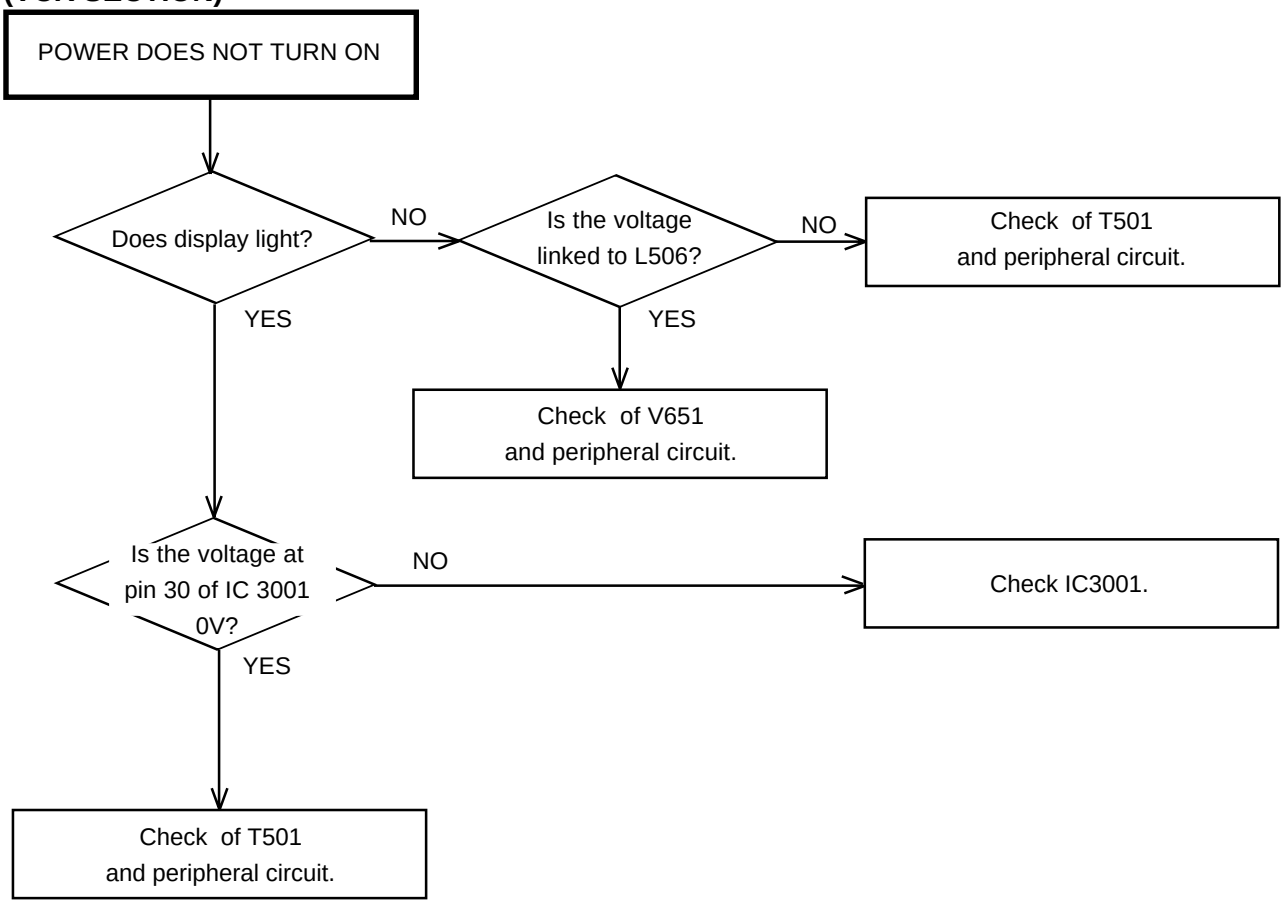
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

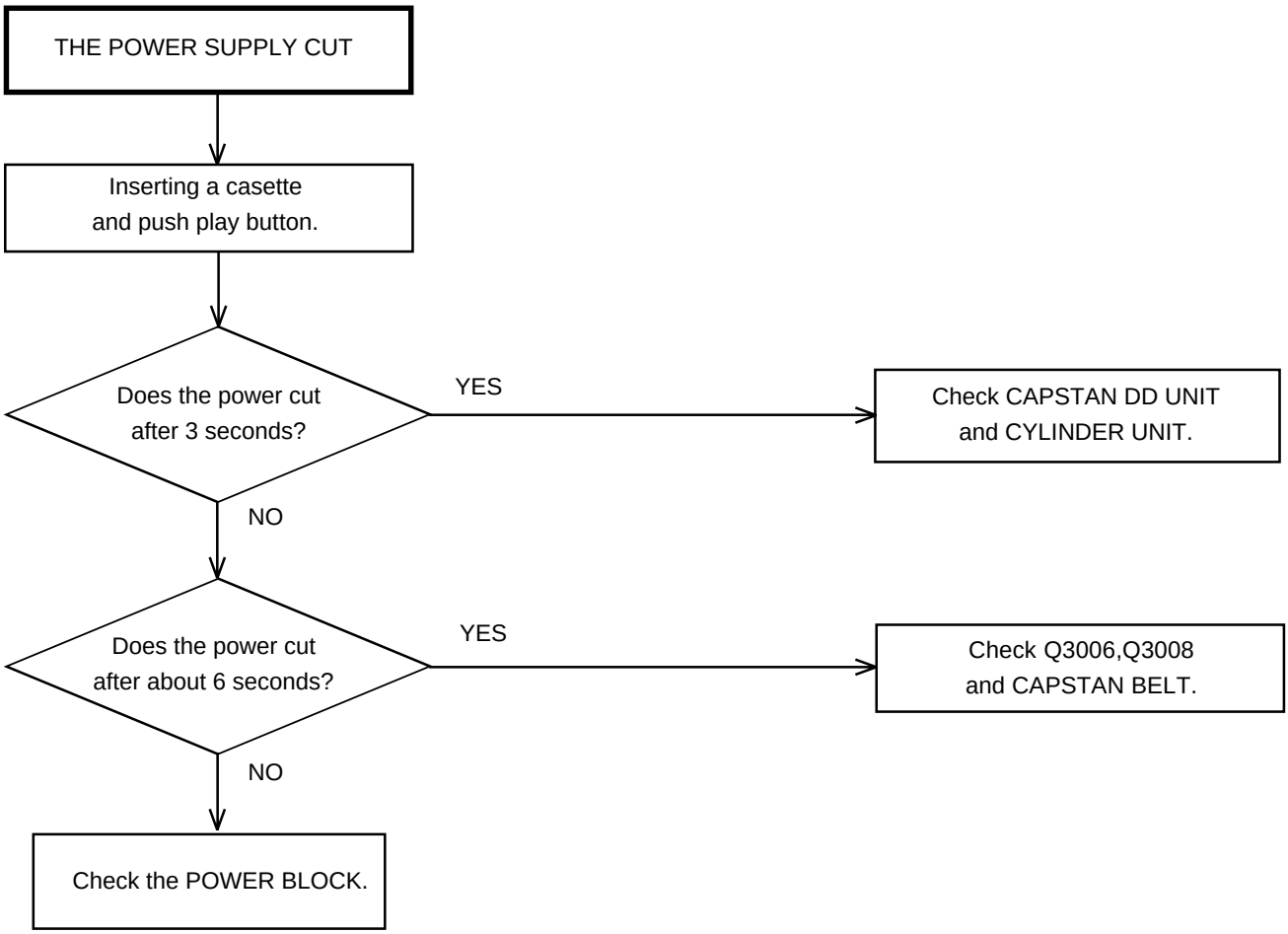


TROUBLESHOOTING GUIDE

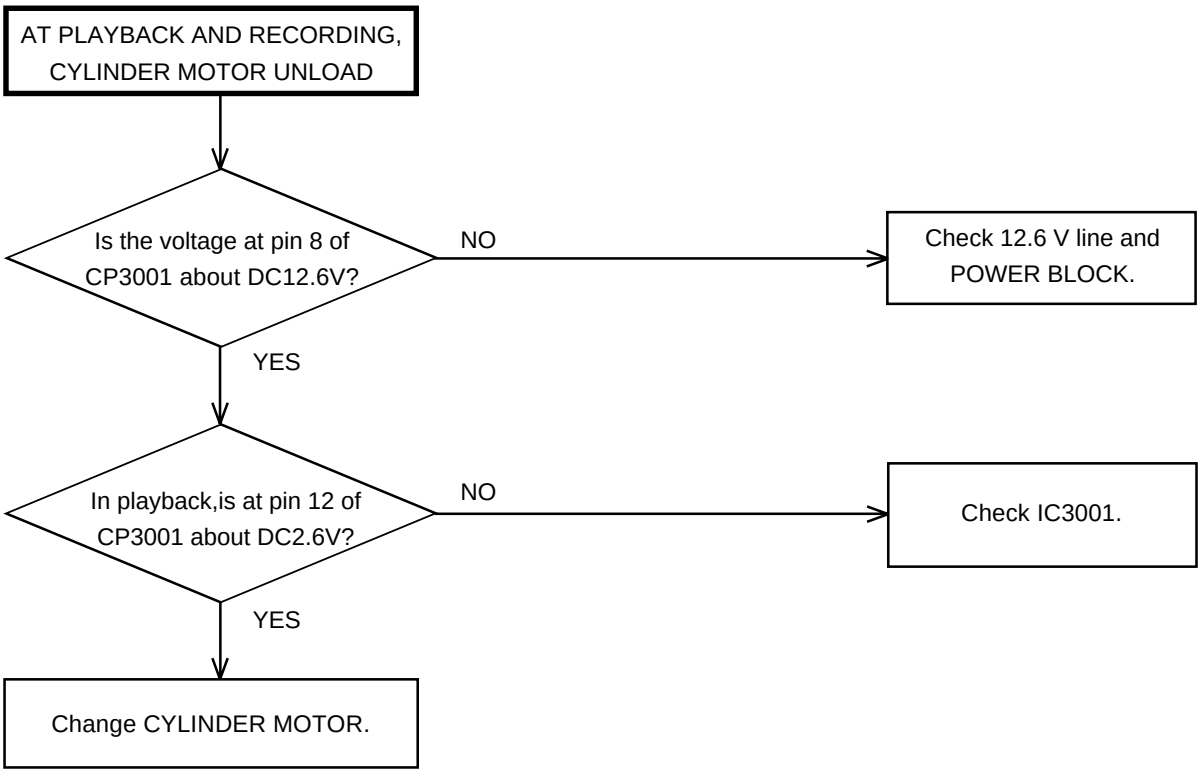
(VCR SECTION)



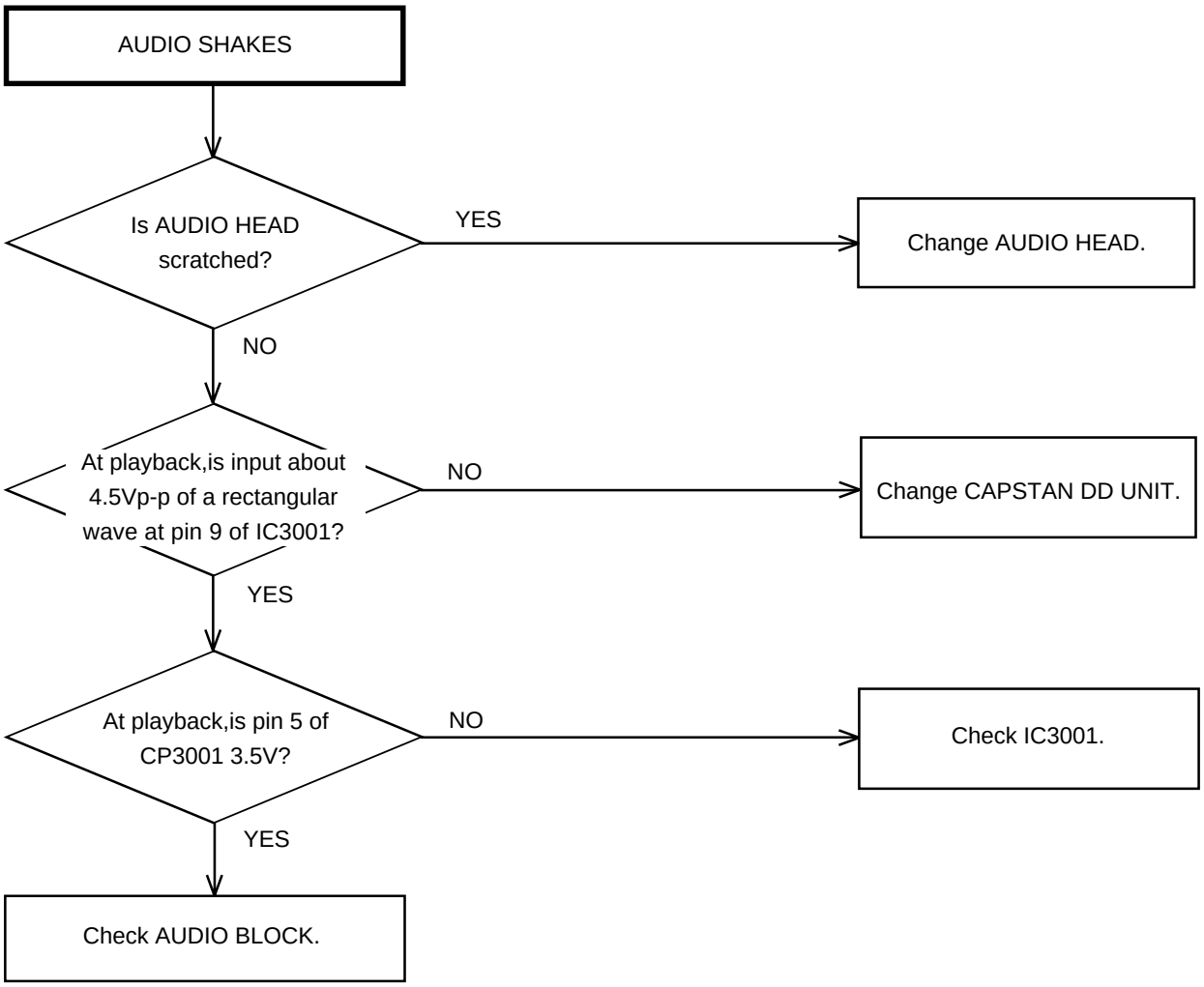
TROUBLESHOOTING GUIDE



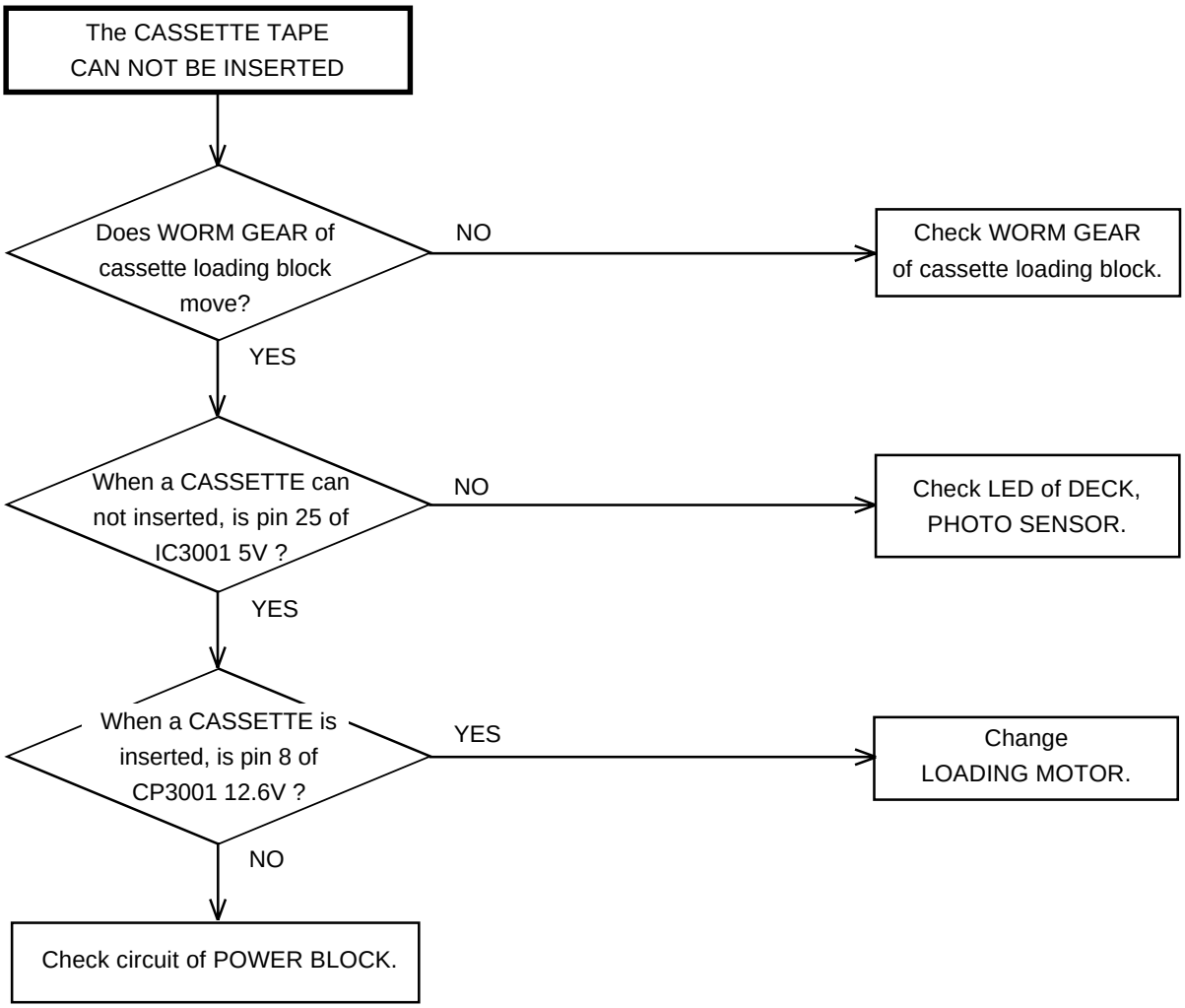
TROUBLESHOOTING GUIDE


AT PLAYBACK AND RECORDING, CYLINDER MOTOR UNLOAD
Is the voltage at pin 8 of CP3001 about DC12.6V?
NO
Check 12.6 V line and POWER BLOCK.
YES
In playback,is at pin 12 of CP3001 about DC2.6V?
NO
Check IC3001.
YES
Change CYLINDER MOTOR.

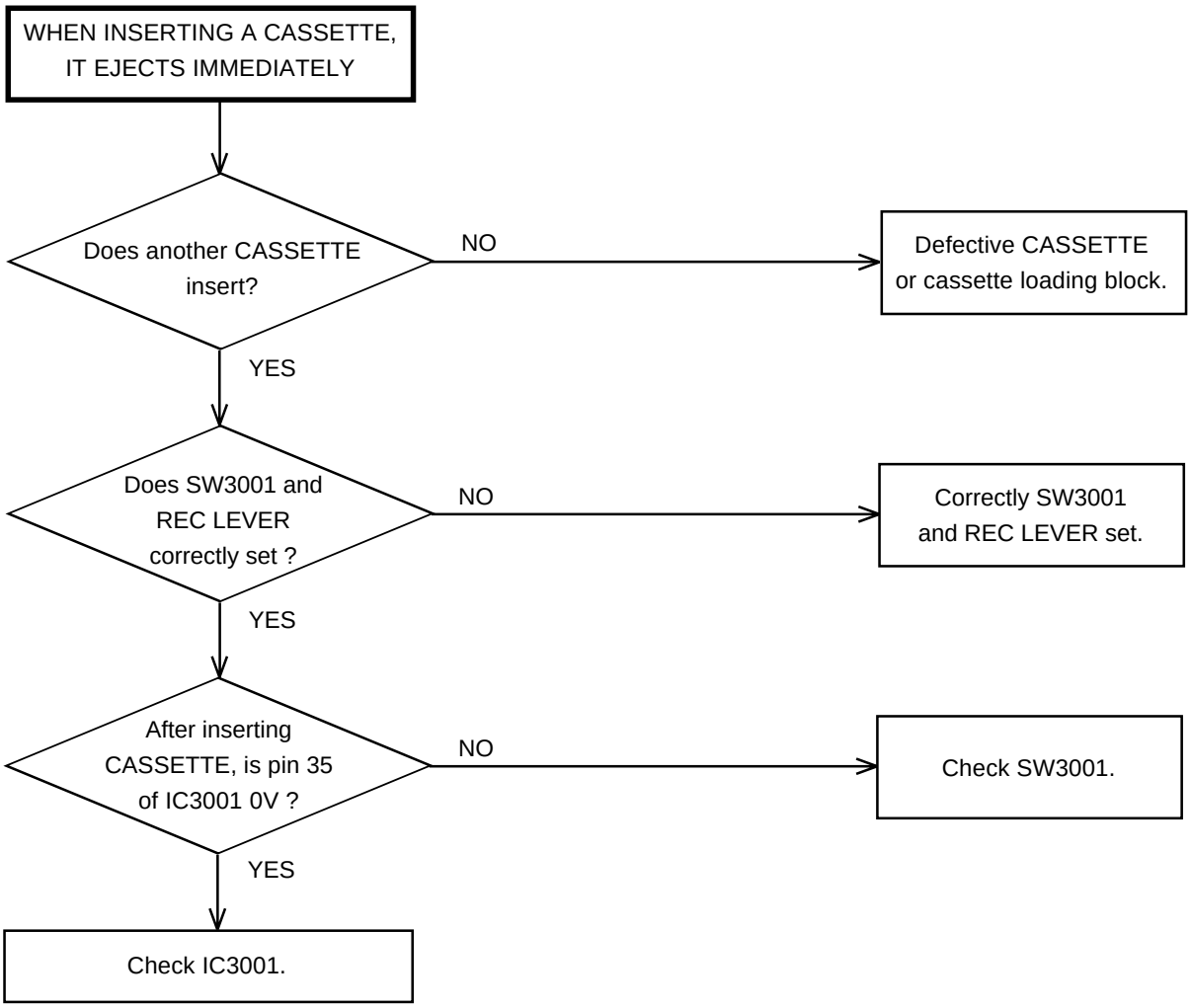
TROUBLESHOOTING GUIDE



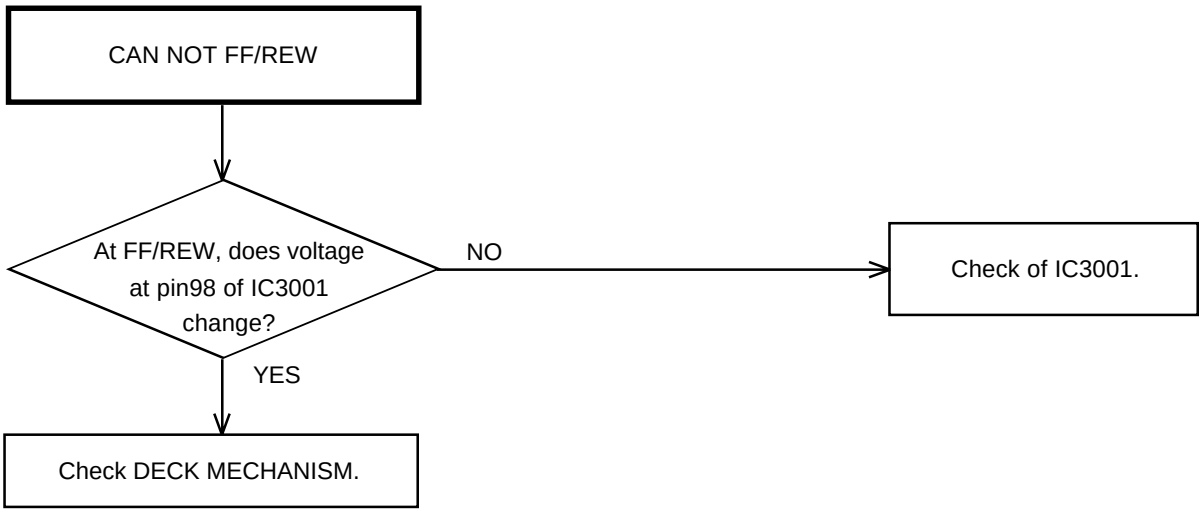
TROUBLESHOOTING GUIDE


The CASSETTE TAPE CAN NOT BE INSERTED
Does WORM GEAR of cassette loading block move?
NO
Check WORM GEAR of cassette loading block.
YES
When a CASSETTE can not inserted, is pin 25 of IC3001 5V ?
NO
Check LED of DECK, PHOTO SENSOR.
YES
When a CASSETTE is inserted, is pin 8 of CP3001 12.6V ?
YES
Change LOADING MOTOR.
NO
Check circuit of POWER BLOCK.

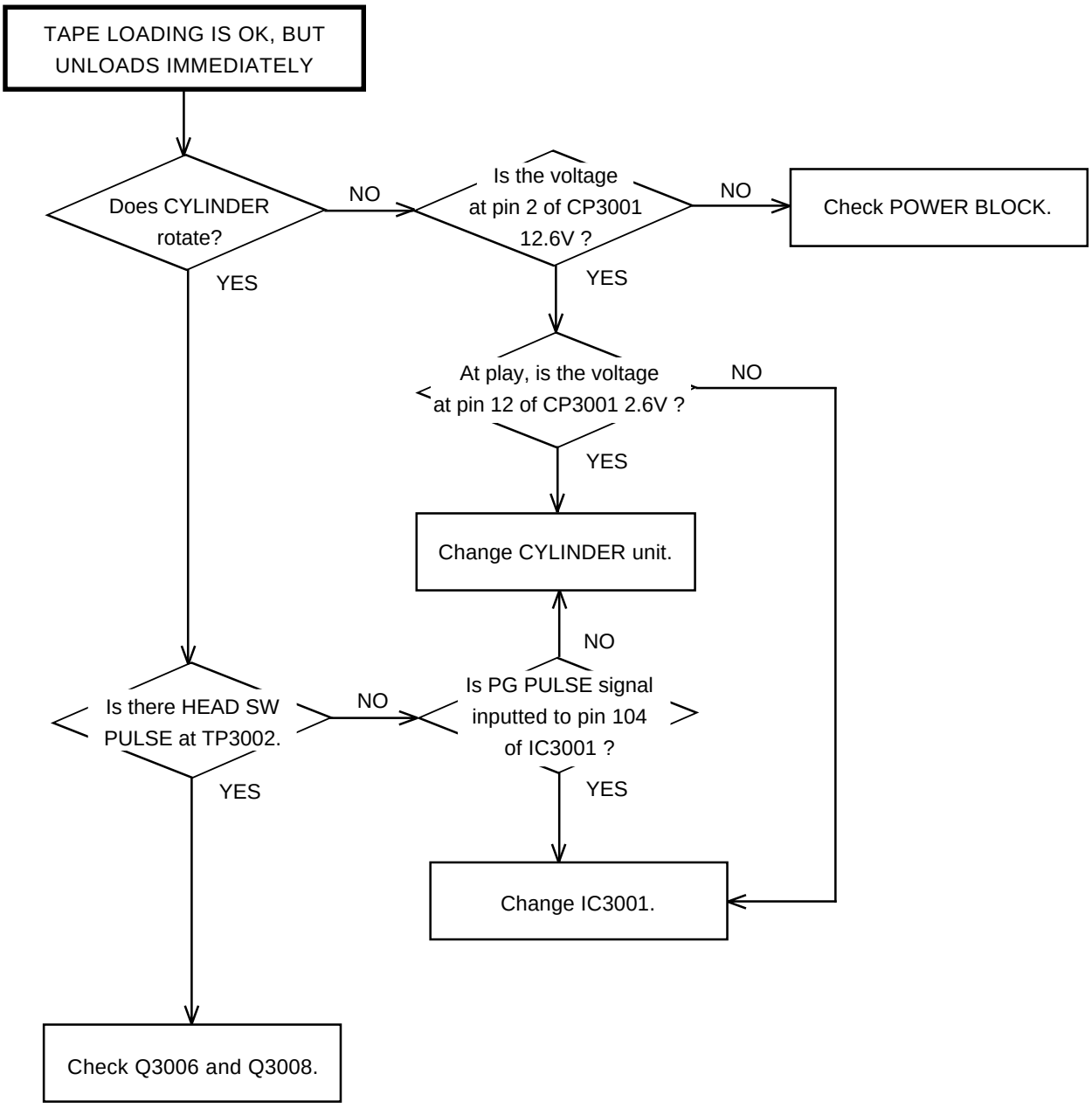
TROUBLESHOOTING GUIDE



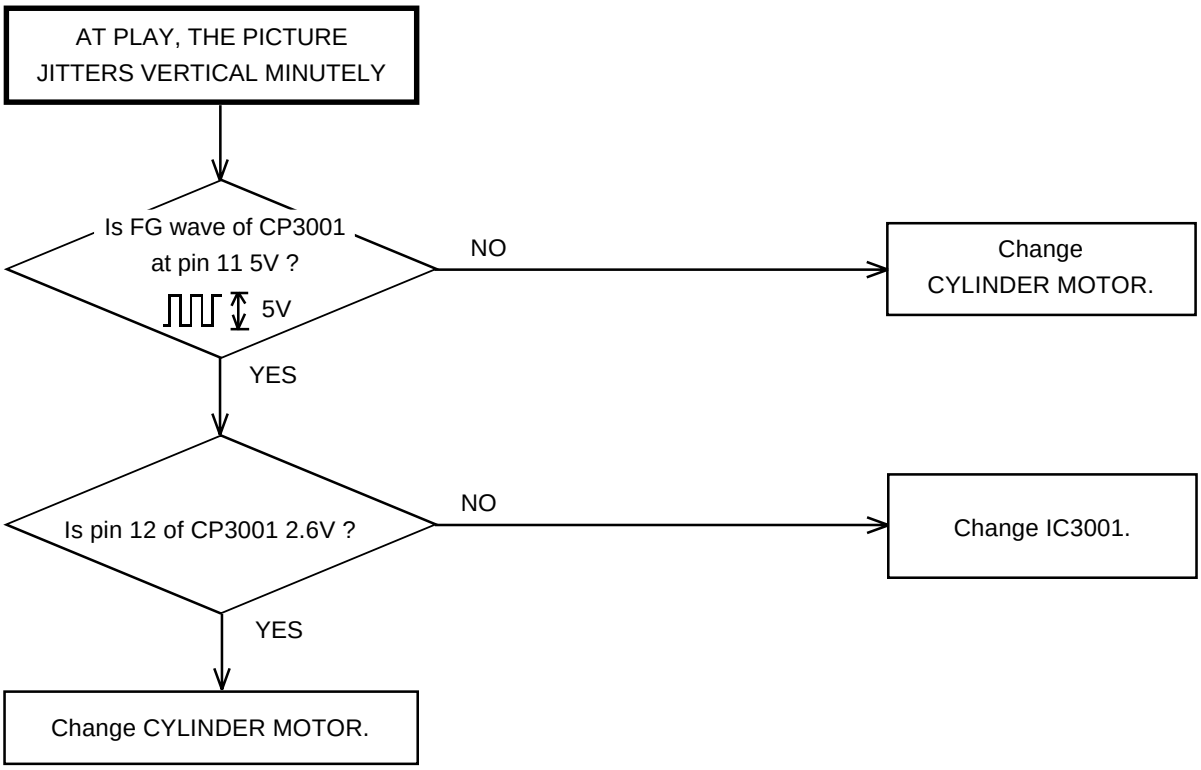
TROUBLESHOOTING GUIDE



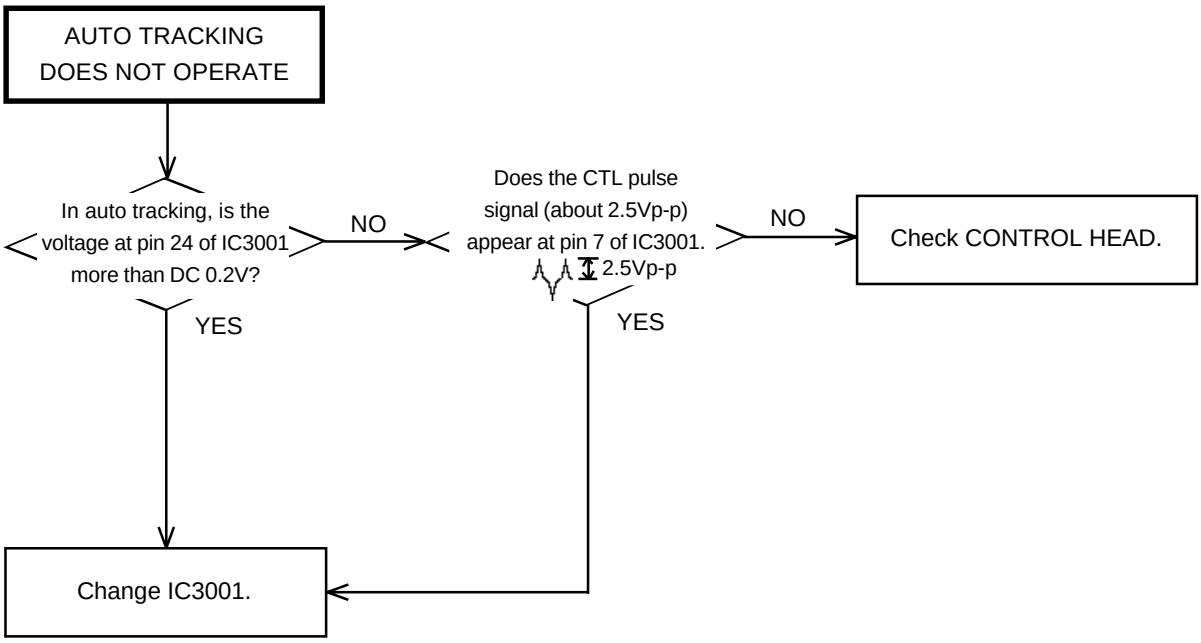
TROUBLESHOOTING GUIDE



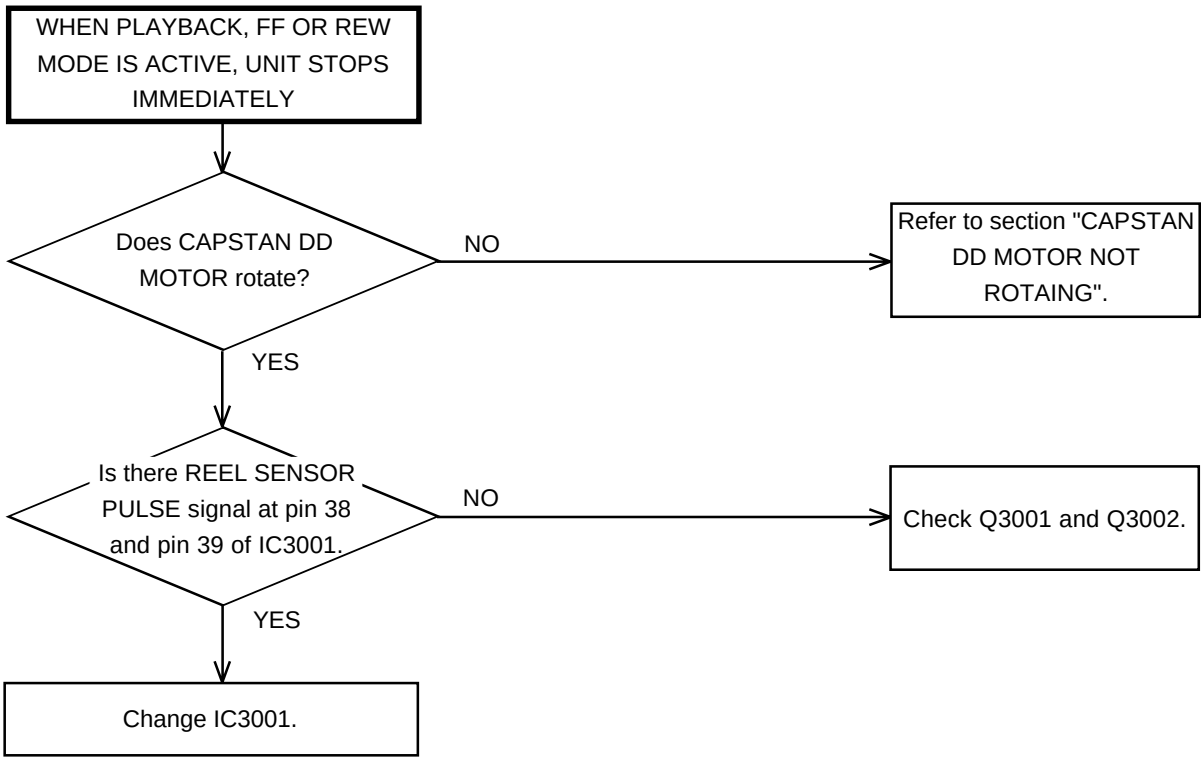
TROUBLESHOOTING GUIDE



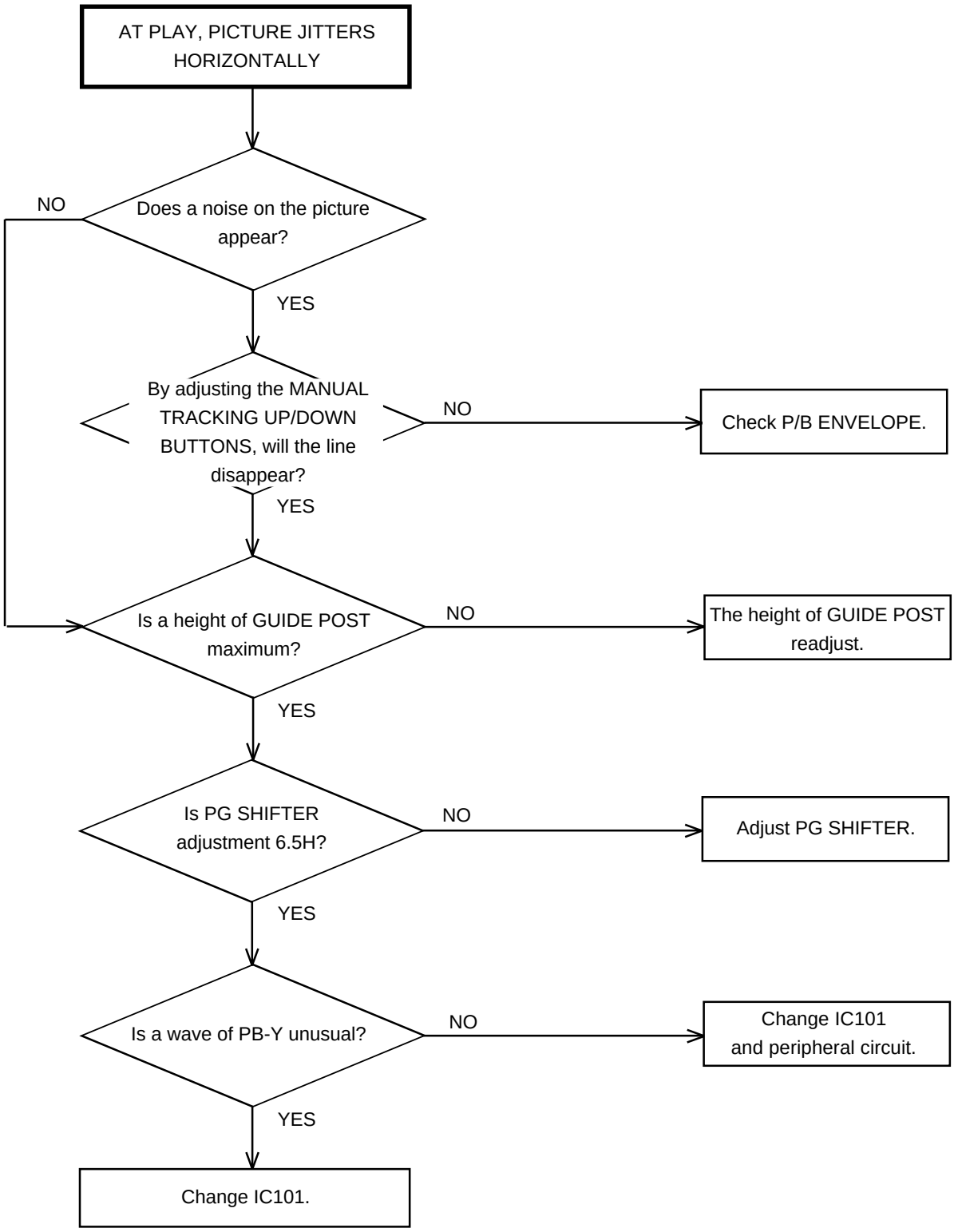
TROUBLESHOOTING GUIDE



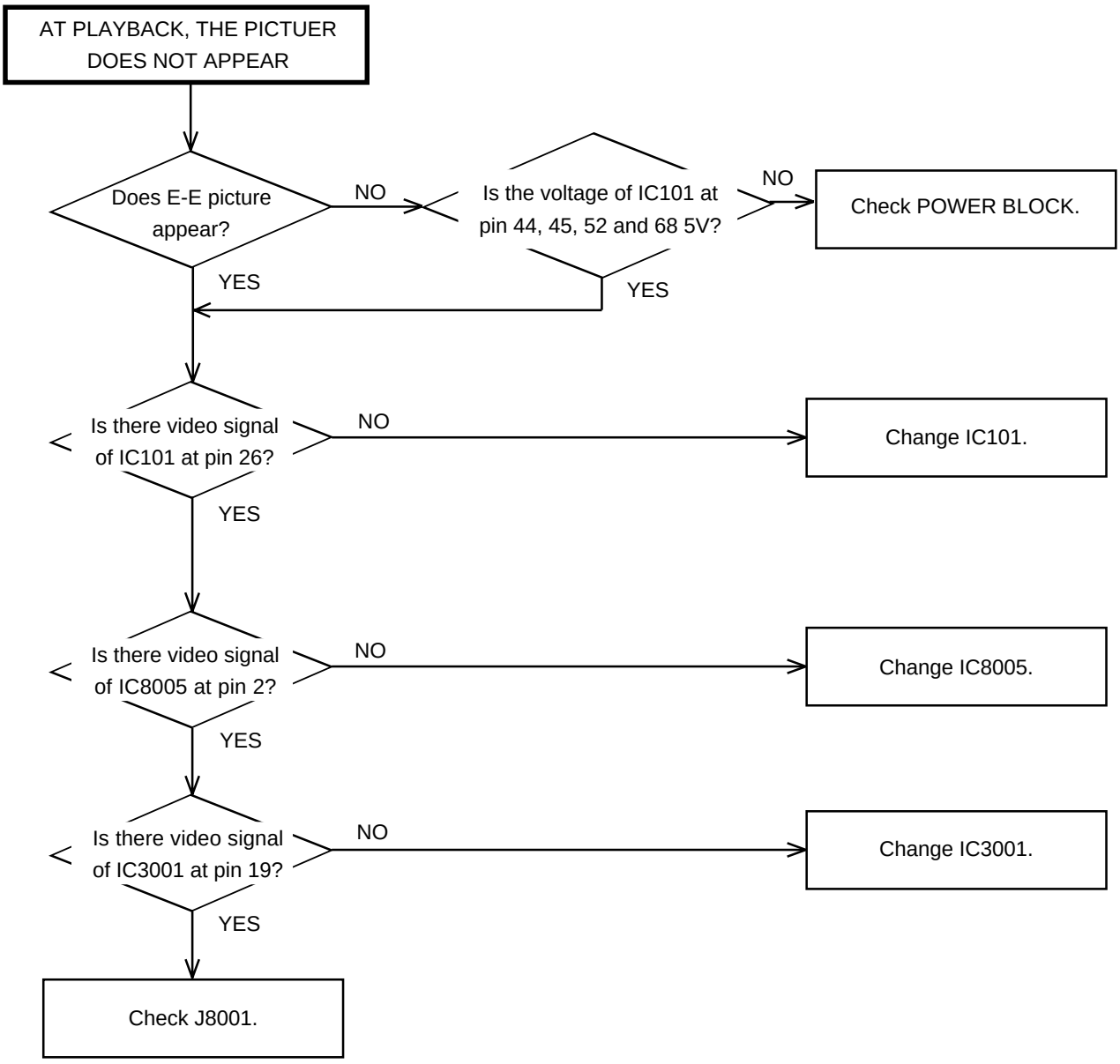
TROUBLESHOOTING GUIDE


WHEN PLAYBACK, FF OR REW MODE IS ACTIVE, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
NO
Refer to section "CAPSTAN DD MOTOR NOT ROTAING".
YES
Is there REEL SENSOR PULSE signal at pin 38 and pin 39 of IC3001.
NO
Check Q3001 and Q3002.
YES
Change IC3001.

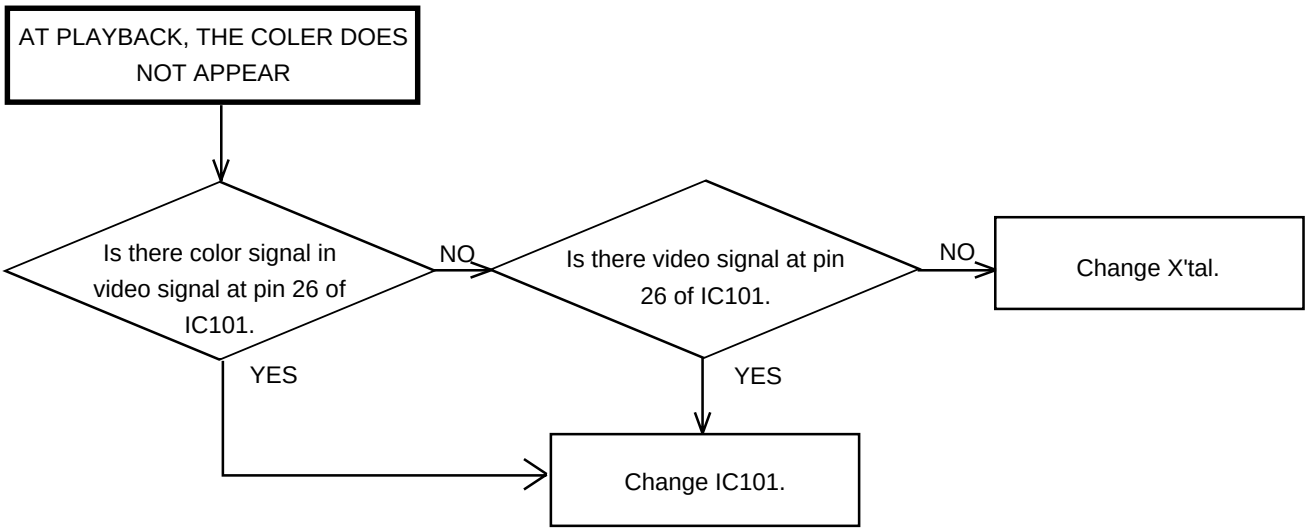
TROUBLESHOOTING GUIDE



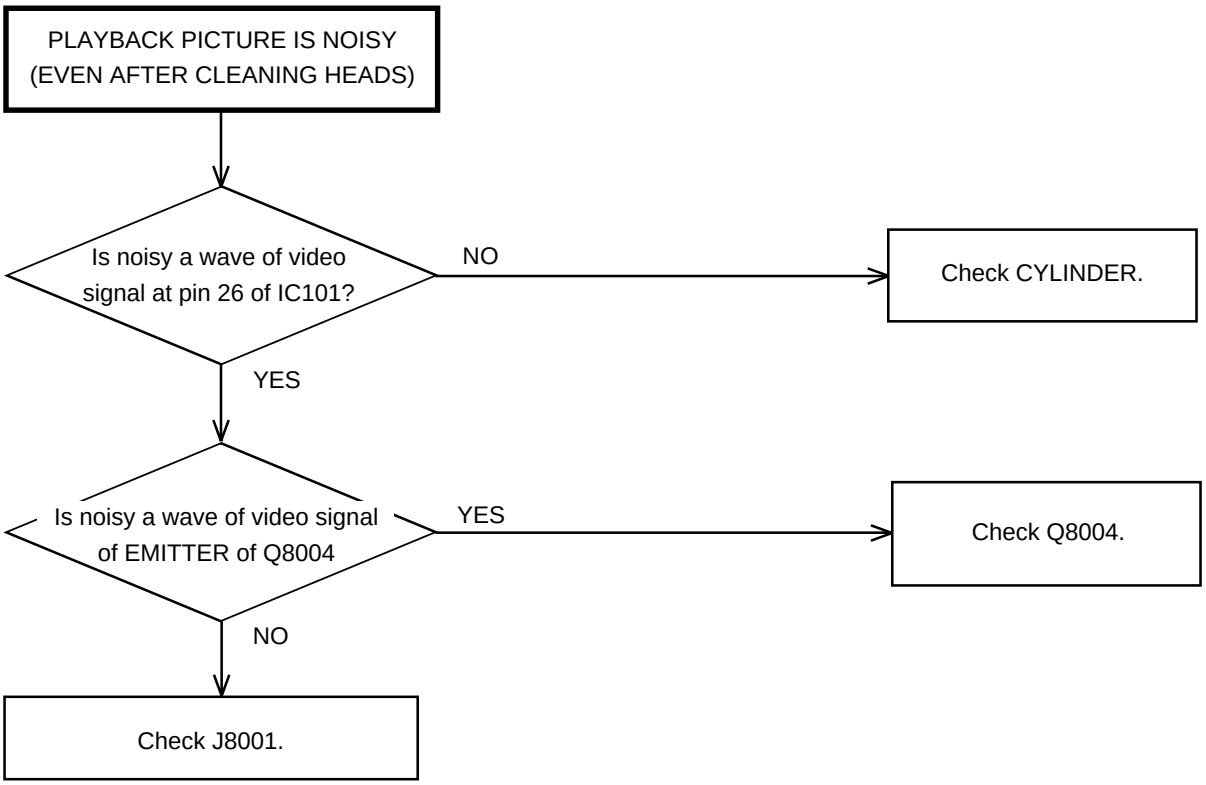
TROUBLESHOOTING GUIDE



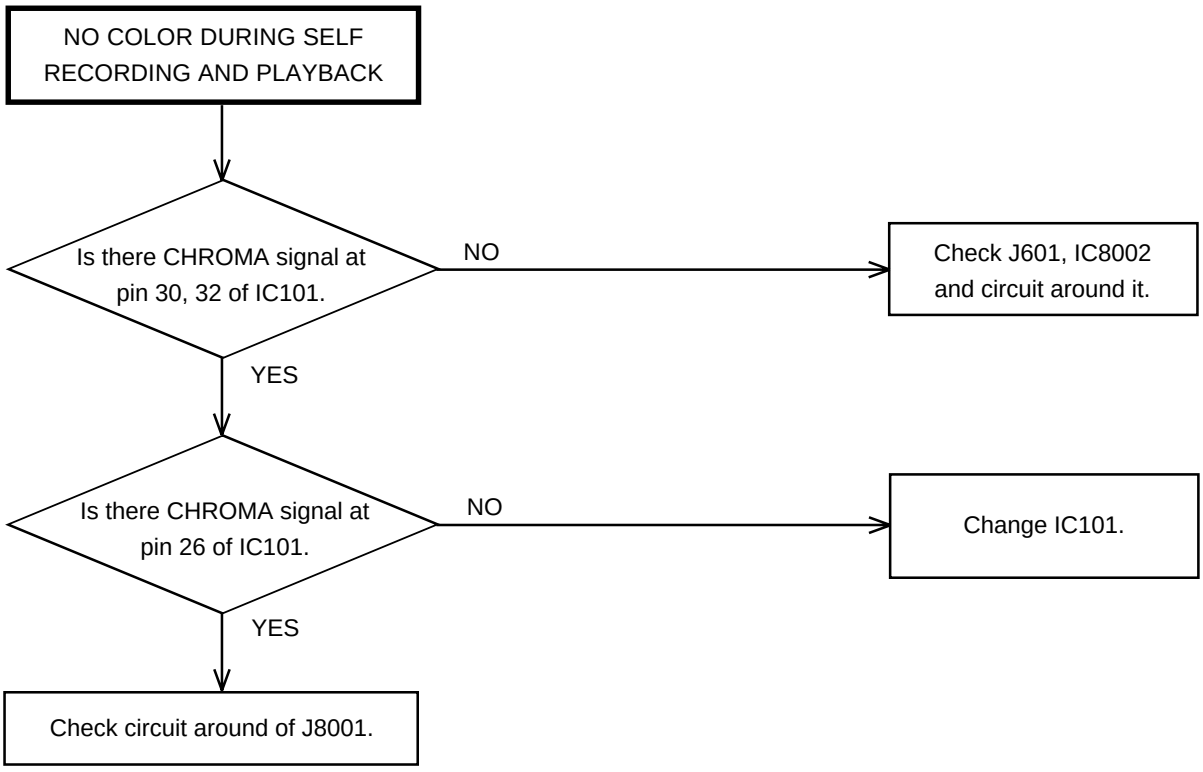
TROUBLESHOOTING GUIDE


AT PLAYBACK, THE COLER DOES NOT APPEAR
Is there color signal in video signal at pin 26 of IC101.
NO
Is there video signal at pin 26 of IC101.
NO
Change X'tal.
YES
YES
Change IC101.

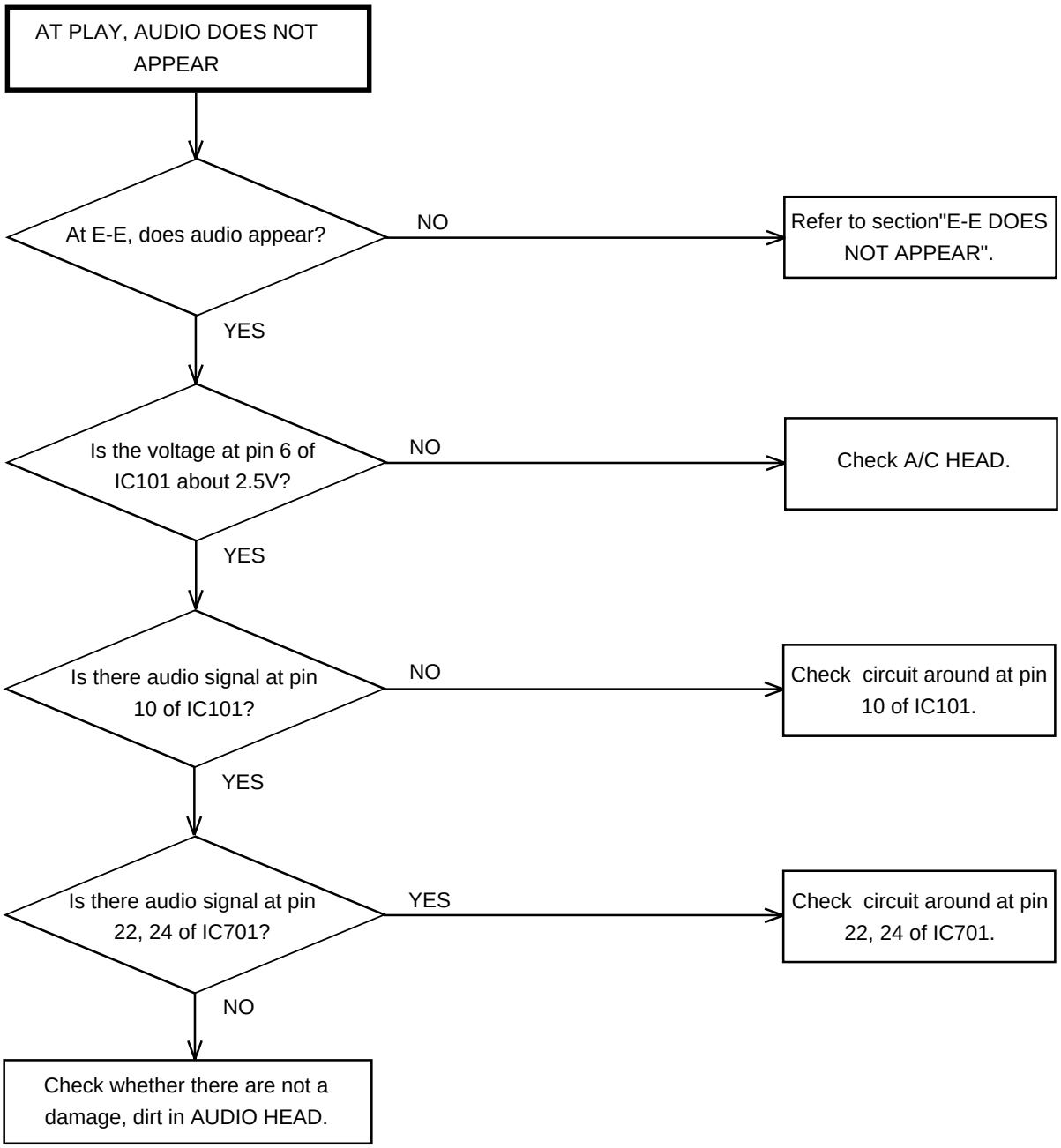
TROUBLESHOOTING GUIDE



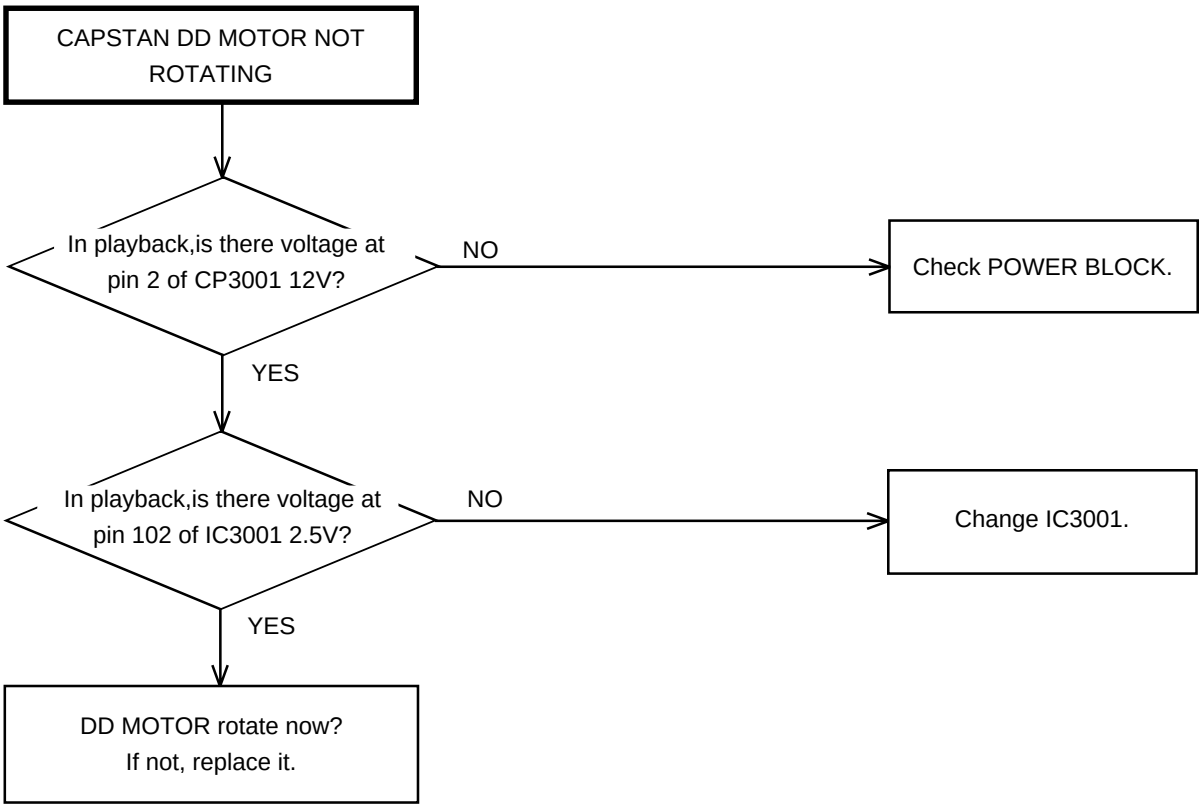
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Is there CHROMA signal at pin 30, 32 of IC101.
NO
Check J601, IC8002 and circuit around it.
YES
Is there CHROMA signal at pin 26 of IC101.
NO
Change IC101.
YES
Check circuit around of J8001.

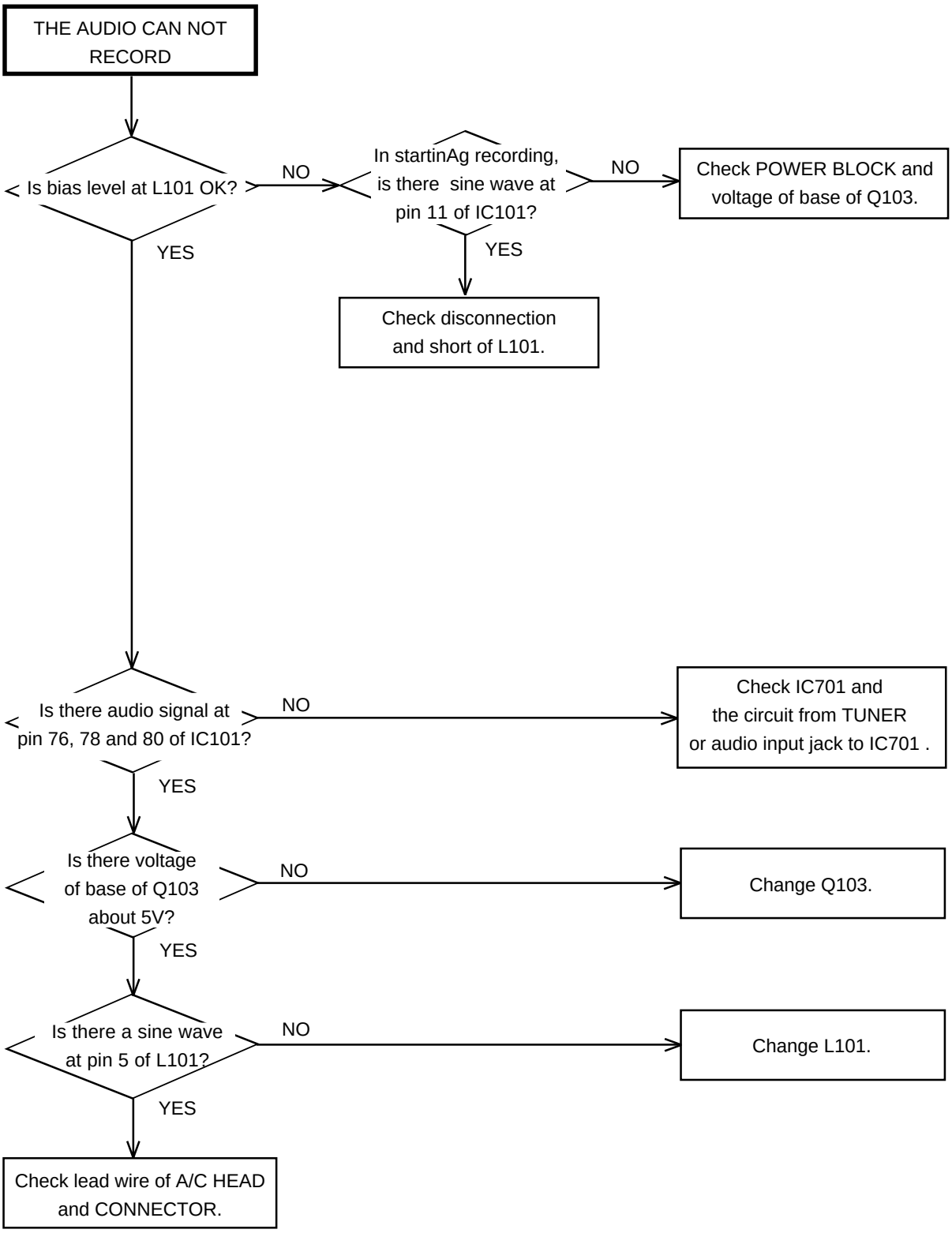
TROUBLESHOOTING GUIDE


AT PLAY, AUDIO DOES NOT APPEAR
At E-E, does audio appear?
NO
Refer to section"E-E DOES NOT APPEAR".
YES
Is the voltage at pin 6 of IC101 about 2.5V?
NO
Check A/C HEAD.
YES
Is there audio signal at pin 10 of IC101?
NO
Check circuit around at pin 10 of IC101.
YES
Is there audio signal at pin 22, 24 of IC701?
YES
Check circuit around at pin 22, 24 of IC701.
NO
Check whether there are not a damage, dirt in AUDIO HEAD.

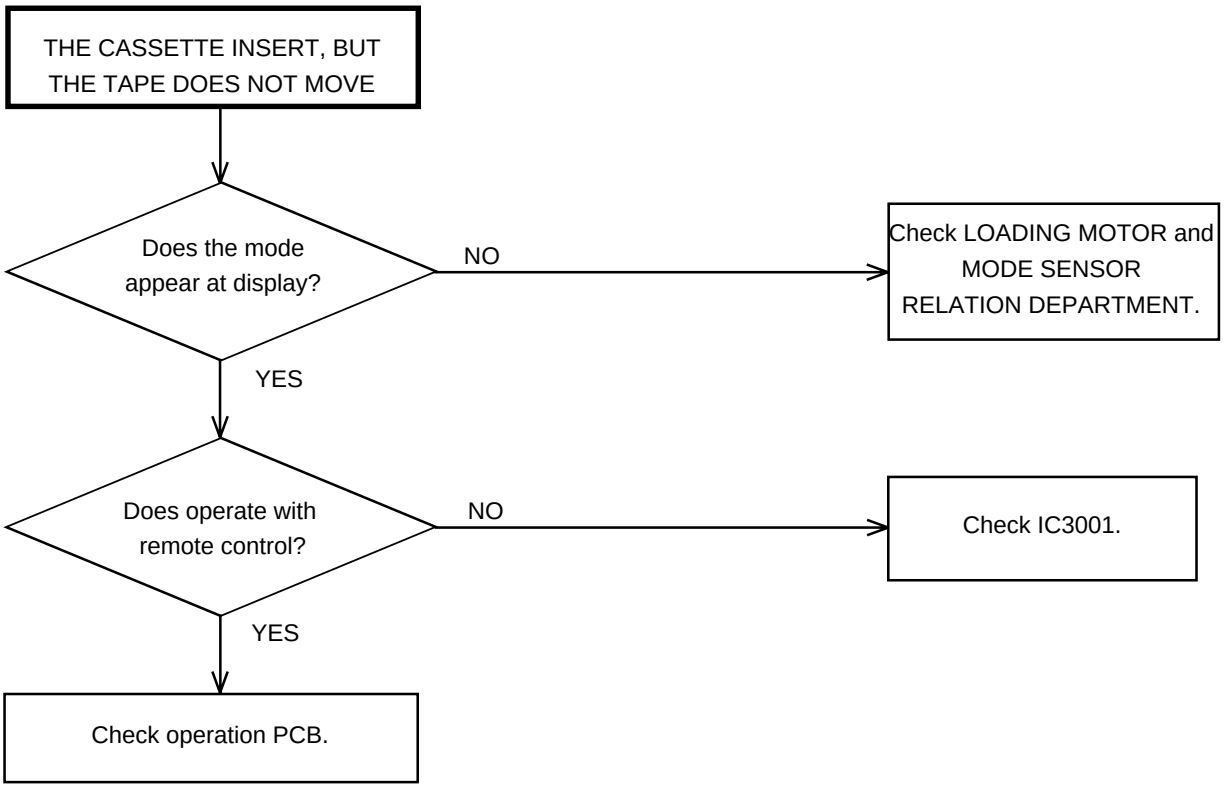
TROUBLESHOOTING GUIDE



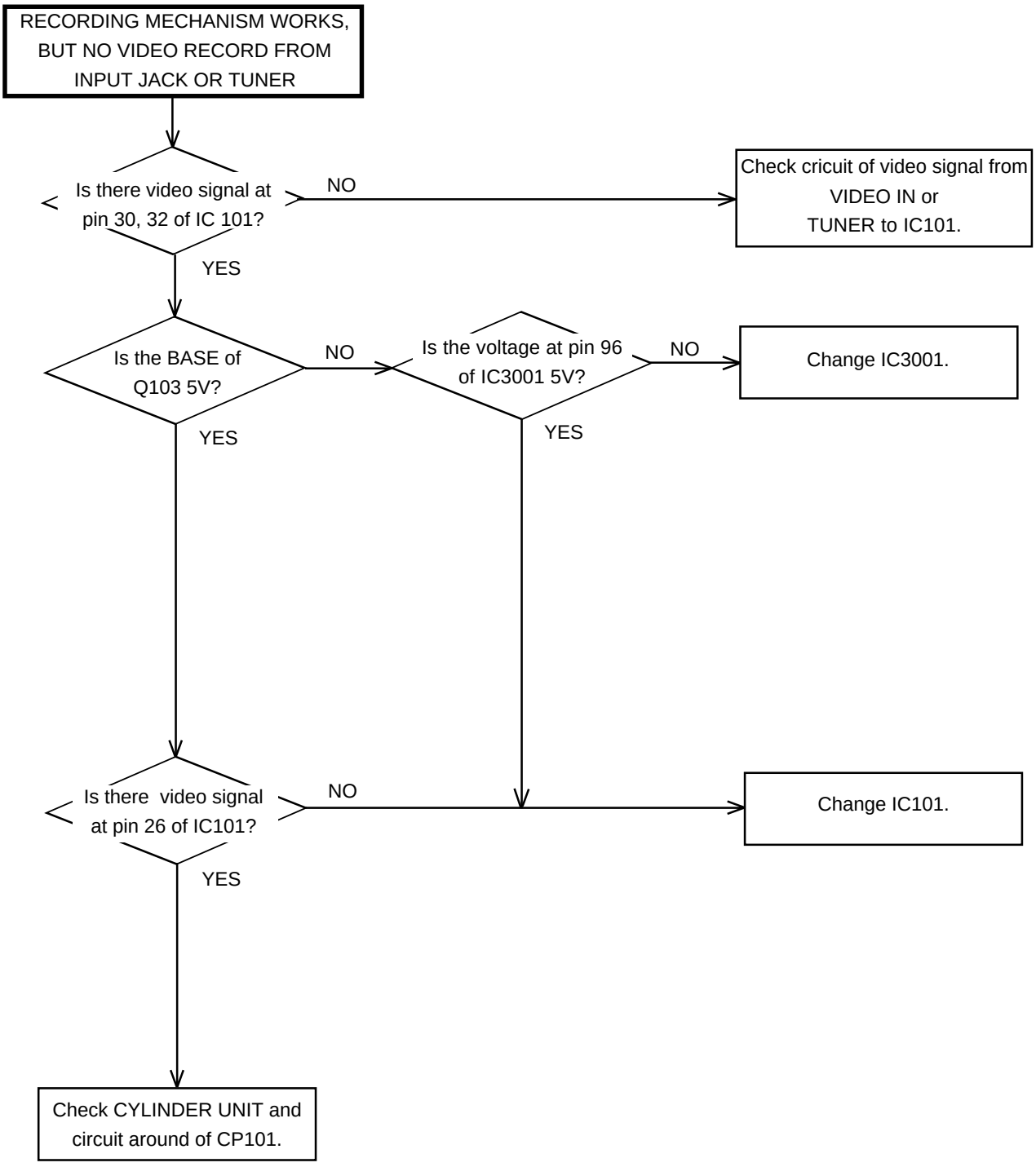
TROUBLESHOOTING GUIDE


THE AUDIO CAN NOT RECORD
Is bias level at L101 OK?
NO
In startinAg recording, is there sine wave at pin 11 of IC101?
NO
Check POWER BLOCK and voltage of base of Q103.
YES
YES
Check disconnection and short of L101.
Is there audio signal at pin 76, 78 and 80 of IC101?
NO
Check IC701 and the circuit from TUNER or audio input jack to IC701 .
YES
Is there voltage of base of Q103 about 5V?
NO
Change Q103.
YES
Is there a sine wave at pin 5 of L101?
NO
Change L101.
YES
Check lead wire of A/C HEAD and CONNECTOR.

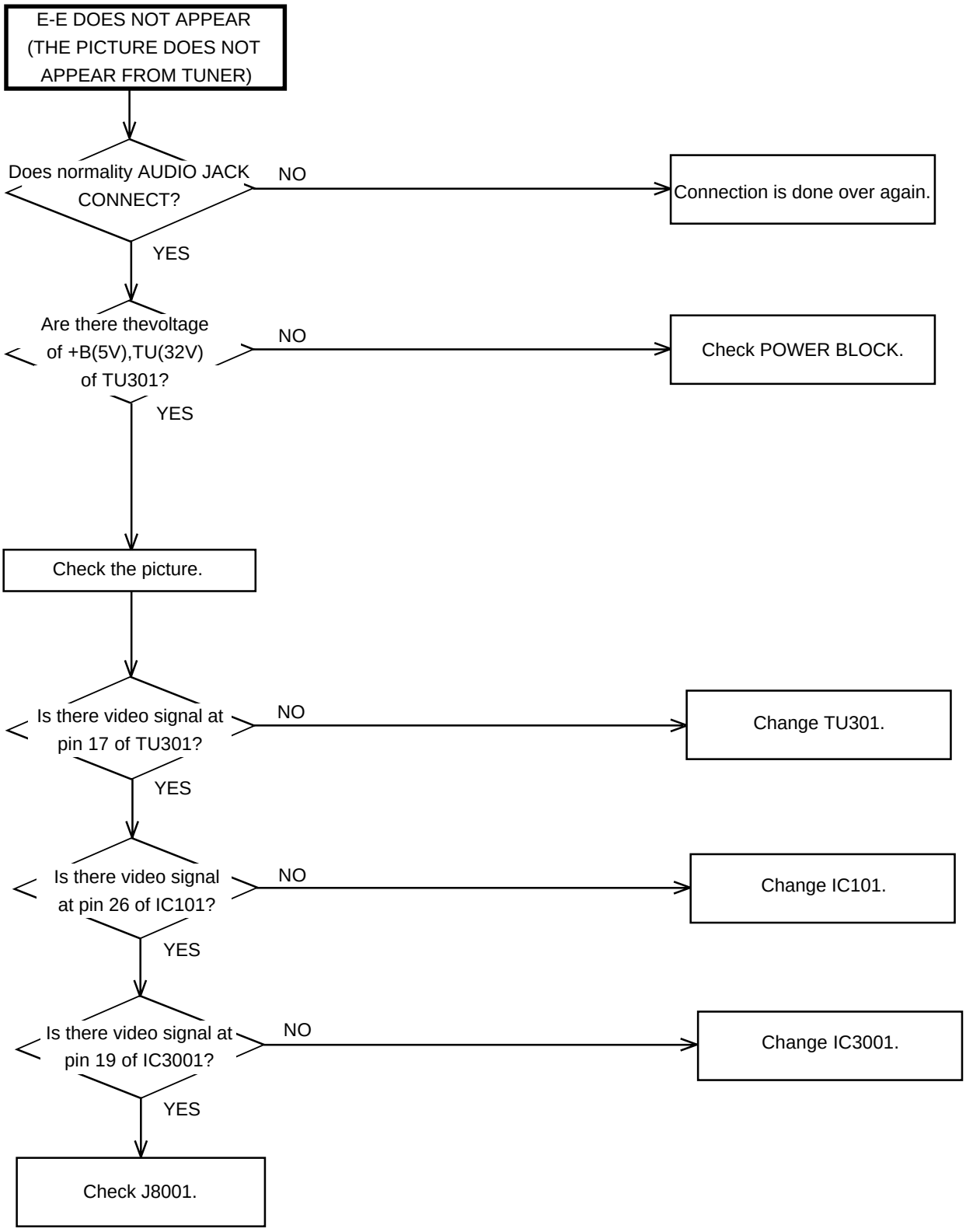
TROUBLESHOOTING GUIDE



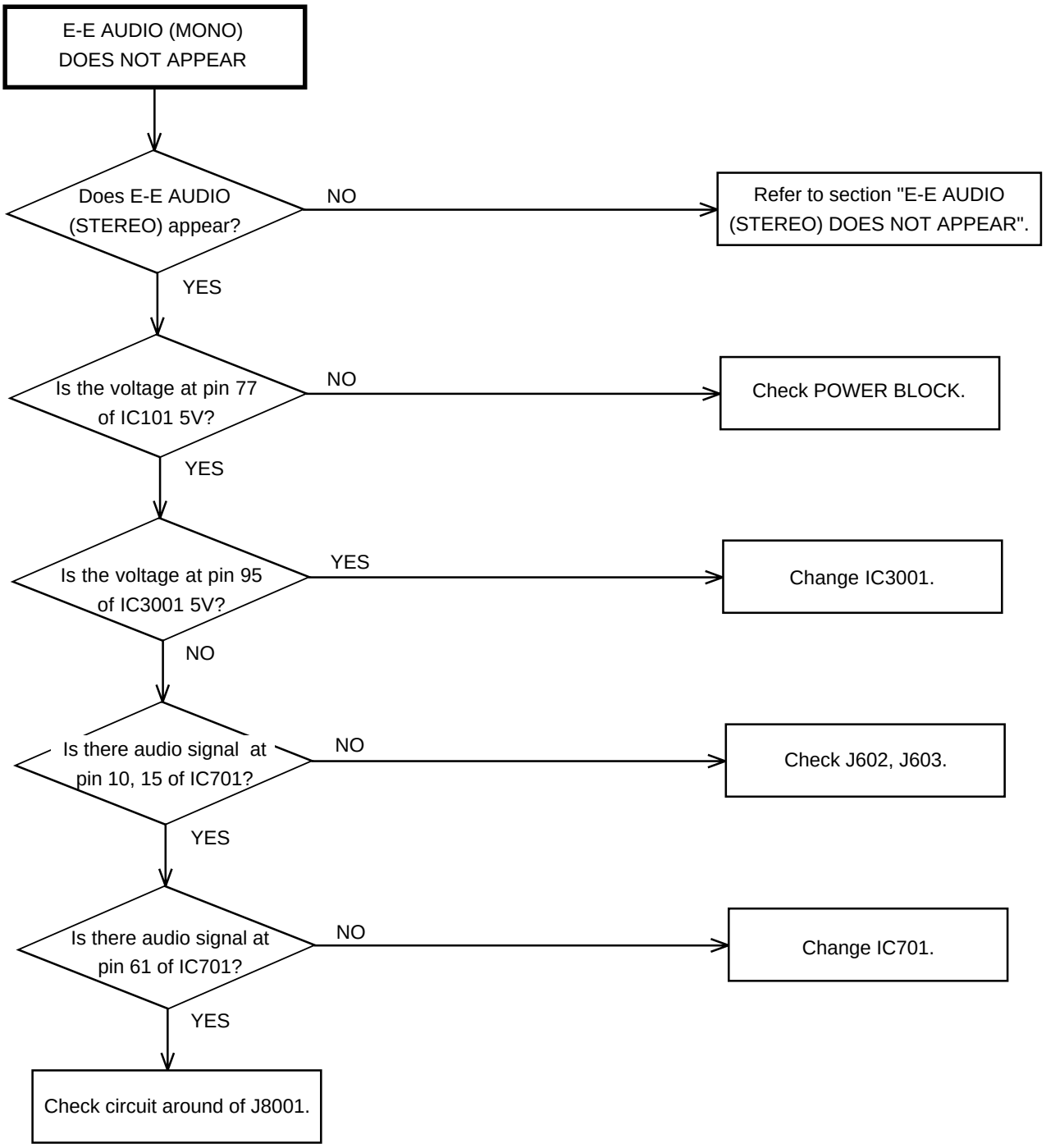
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORD FROM INPUT JACK OR TUNER
Is there video signal at pin 30, 32 of IC 101?
NO
Check cricuit of video signal from VIDEO IN or TUNER to IC101.
YES
Is the BASE of Q103 5V?
NO
Is the voltage at pin 96 of IC3001 5V?
NO
Change IC3001.
YES
YES
Is there video signal at pin 26 of IC101?
NO
Change IC101.
YES
Check CYLINDER UNIT and circuit around of CP101.

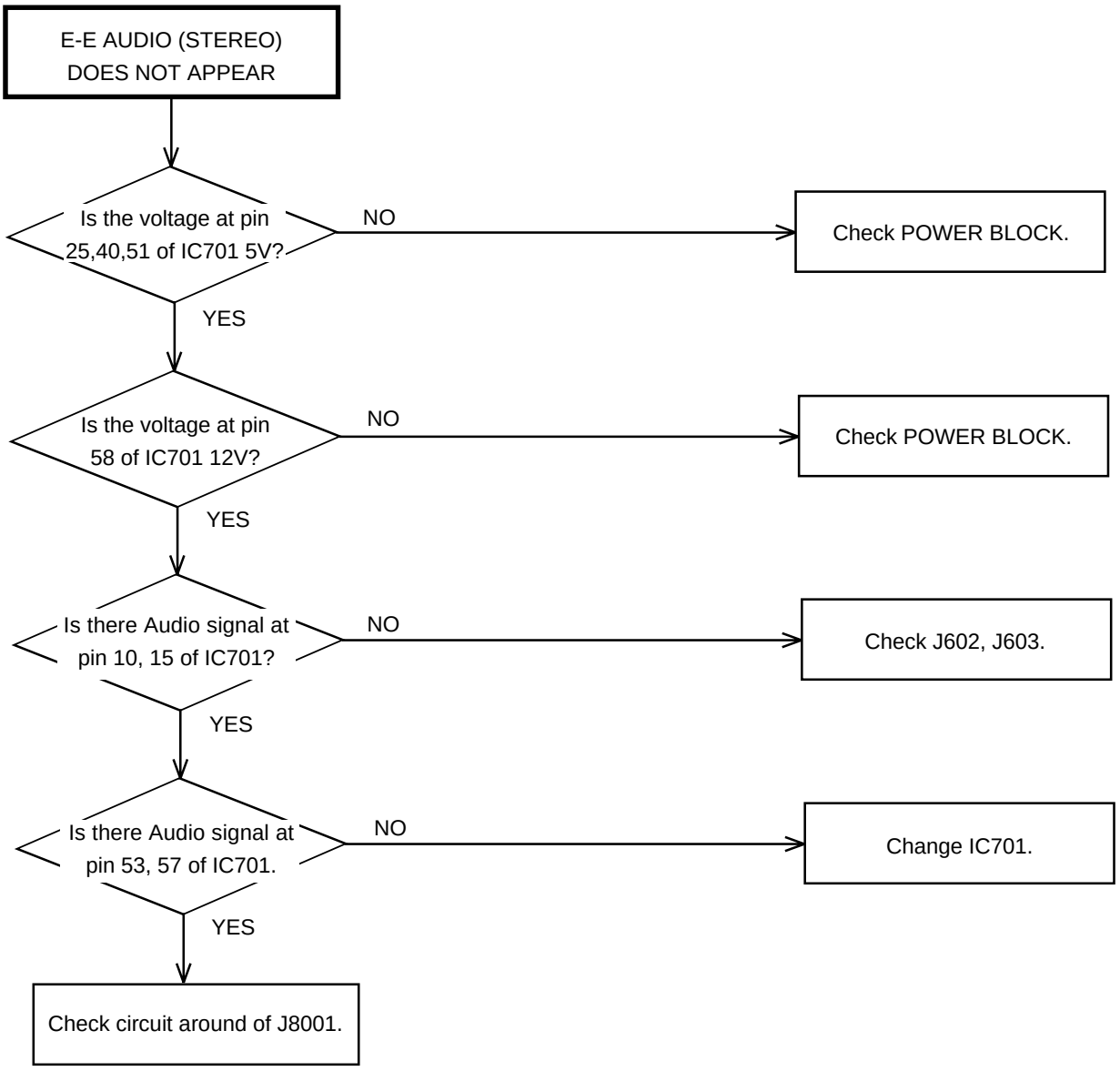
TROUBLESHOOTING GUIDE



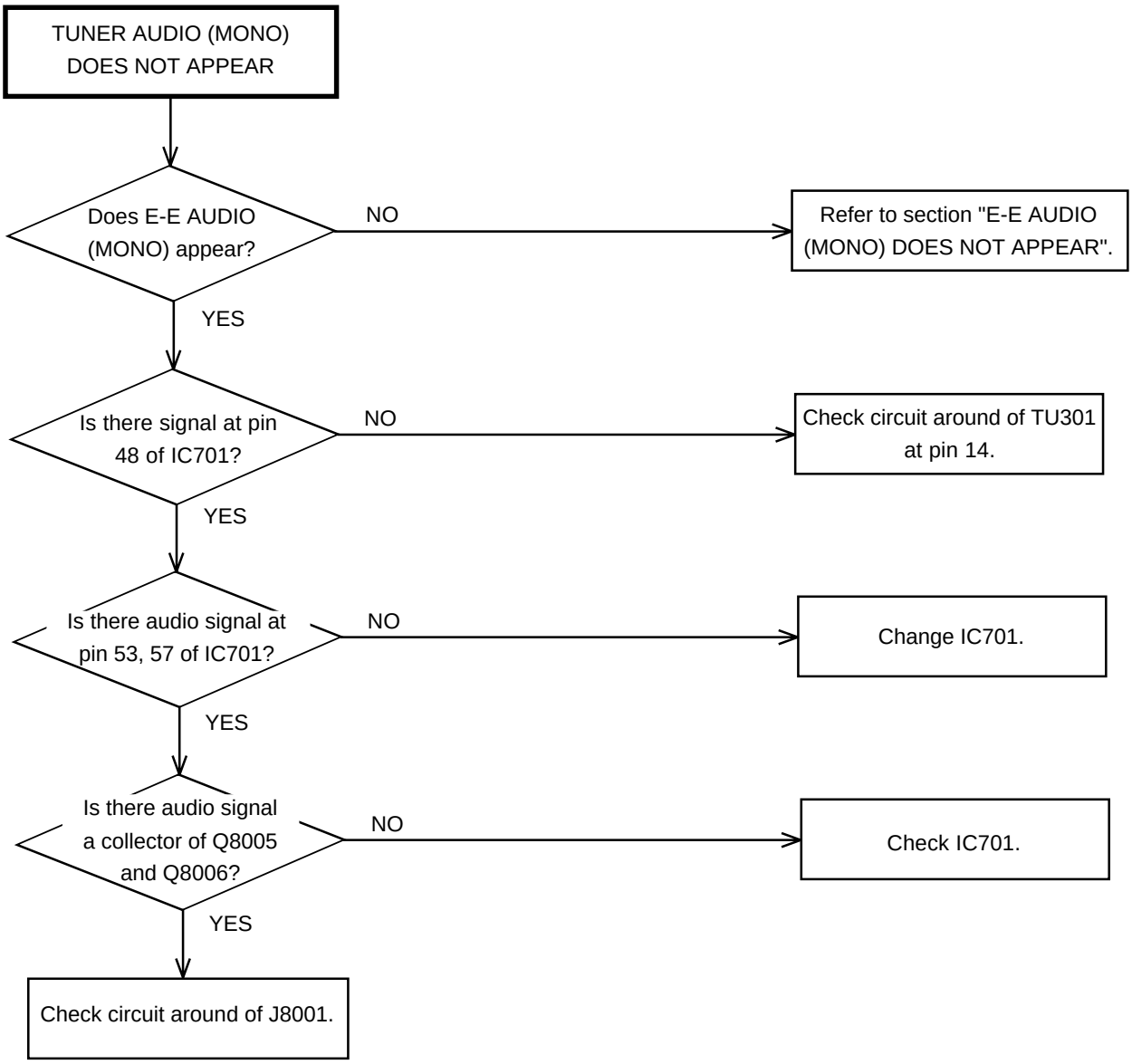
TROUBLESHOOTING GUIDE



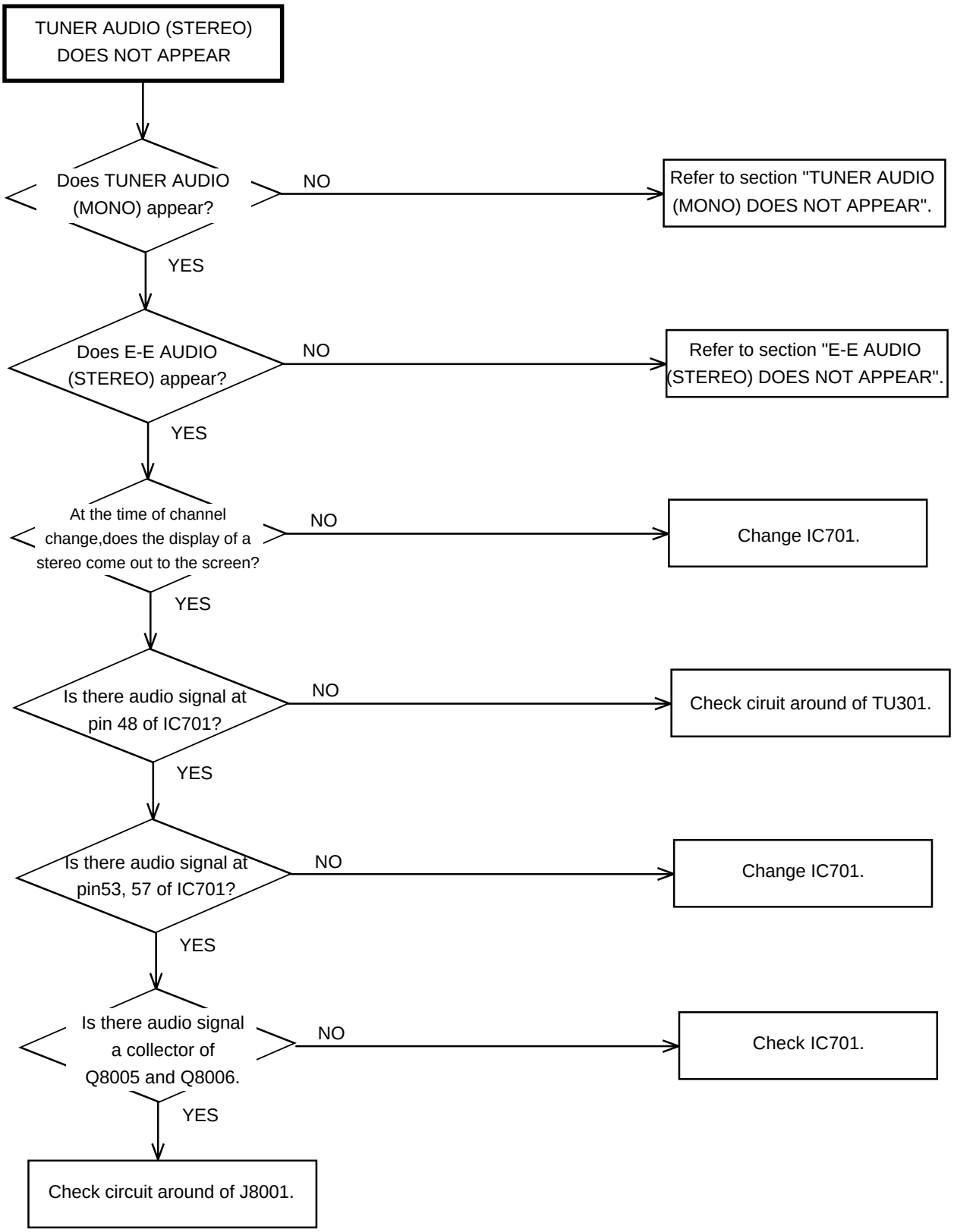
TROUBLESHOOTING GUIDE



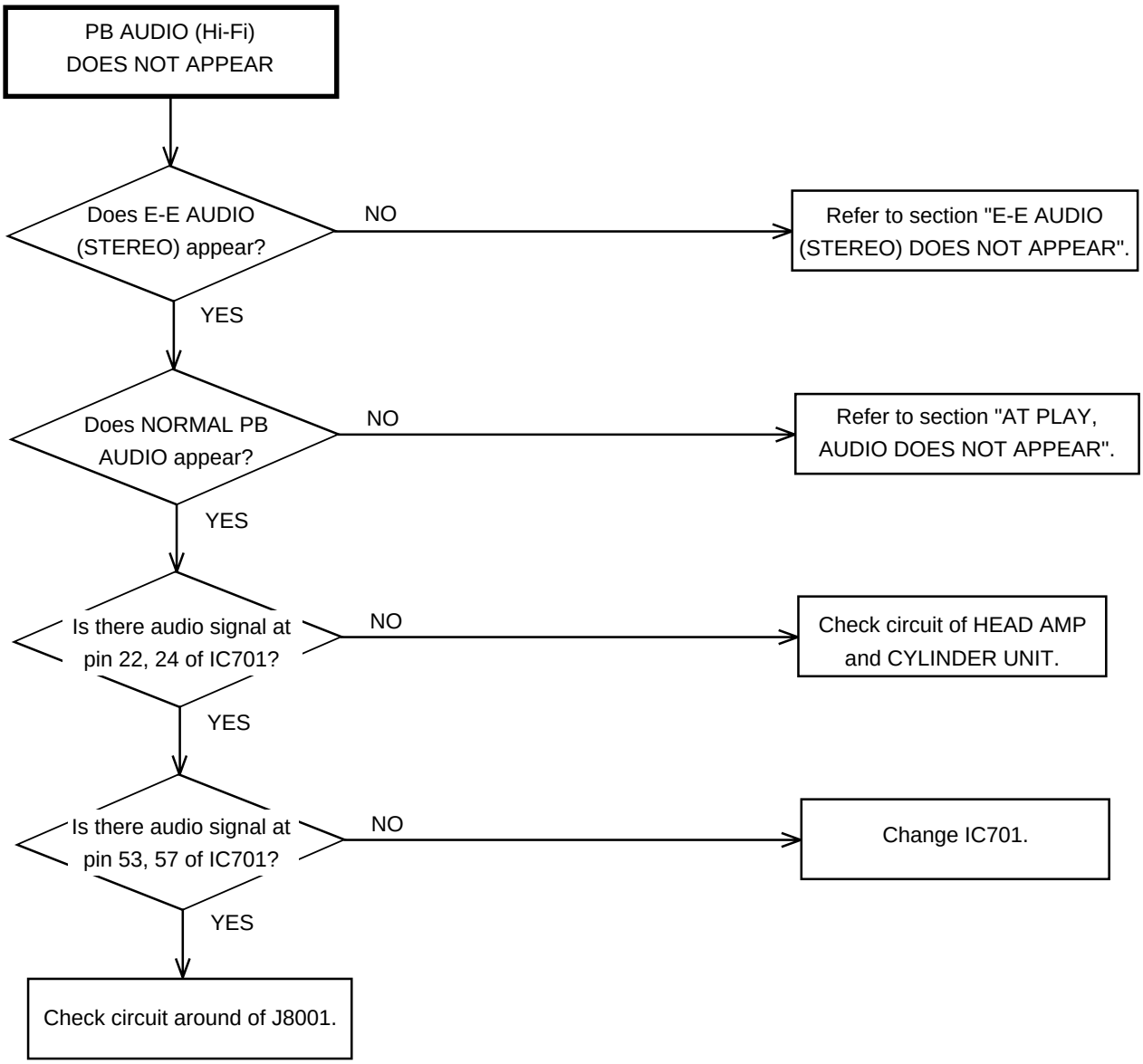
TROUBLESHOOTING GUIDE


TUNER AUDIO (MONO) DOES NOT APPEAR
Does E-E AUDIO (MONO) appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
Is there signal at pin 48 of IC701?
NO
Check circuit around of TU301 at pin 14.
YES
Is there audio signal at pin 53, 57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006?
NO
Check IC701.
YES
Check circuit around of J8001.

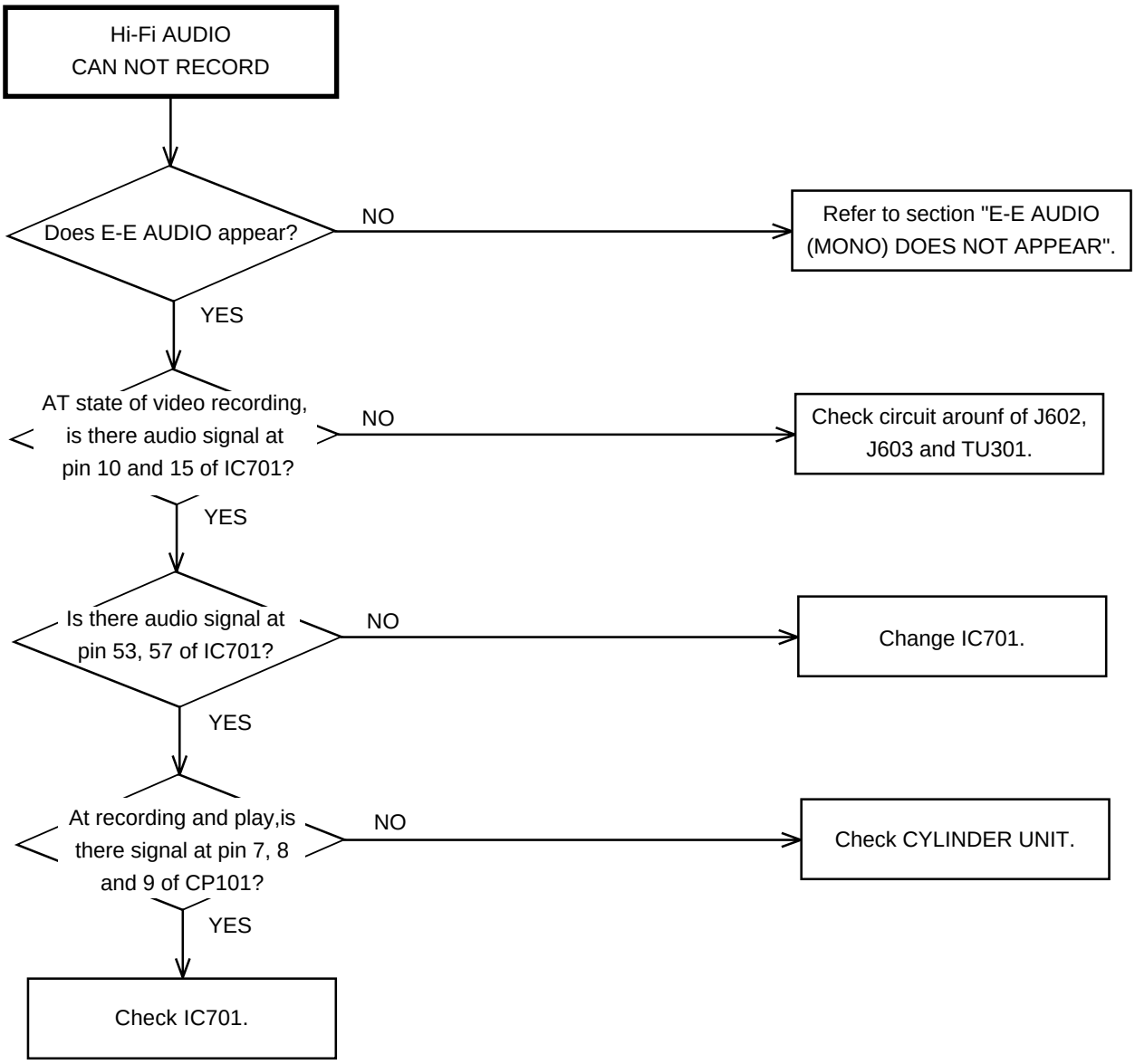
TROUBLESHOOTING GUIDE


TUNER AUDIO (STEREO) DOES NOT APPEAR
Does TUNER AUDIO (MONO) appear?
NO
Refer to section "TUNER AUDIO (MONO) DOES NOT APPEAR".
YES
Does E-E AUDIO (STEREO) appear?
NO
Refer to section "E-E AUDIO (STEREO) DOES NOT APPEAR".
YES
At the time of channel change,does the display of a stereo come out to the screen?
NO
Change IC701.
YES
Is there audio signal at pin 48 of IC701?
NO
Check ciruit around of TU301.
YES
Is there audio signal at pin53, 57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006.
NO
Check IC701.
YES
Check circuit around of J8001.

TROUBLESHOOTING GUIDE

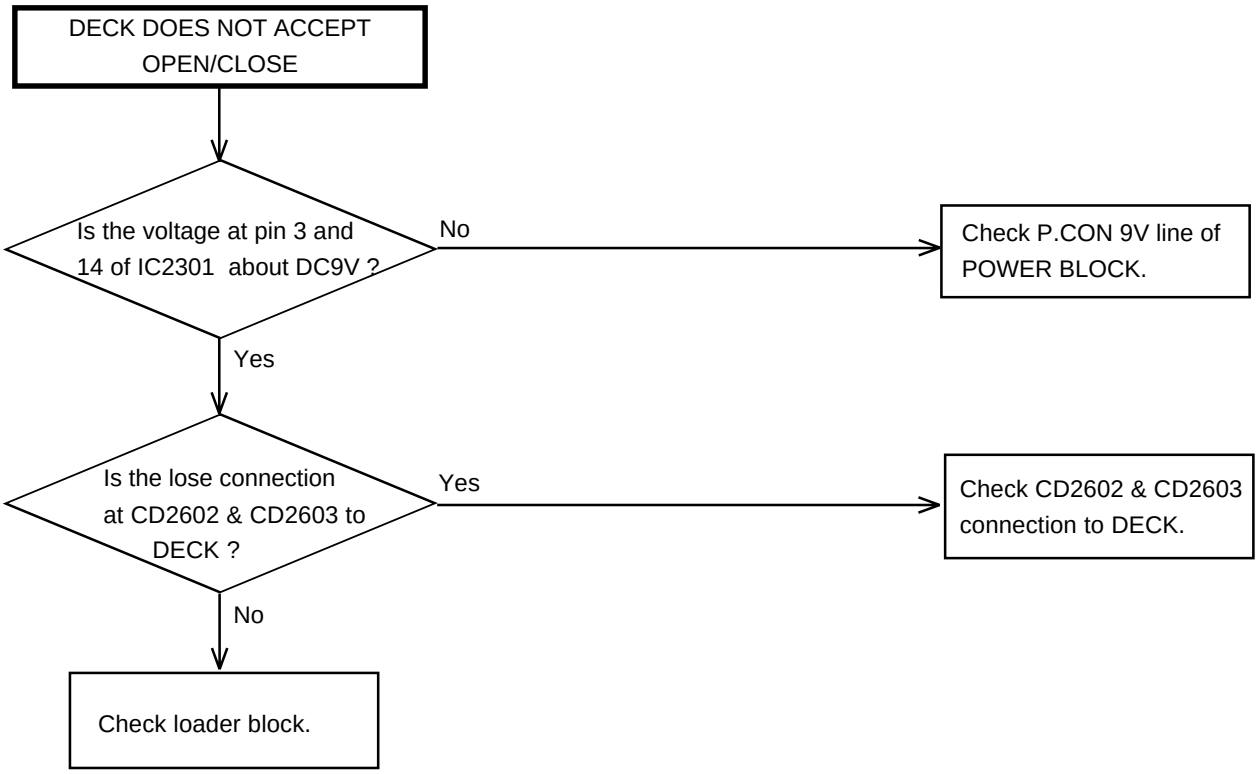


TROUBLESHOOTING GUIDE

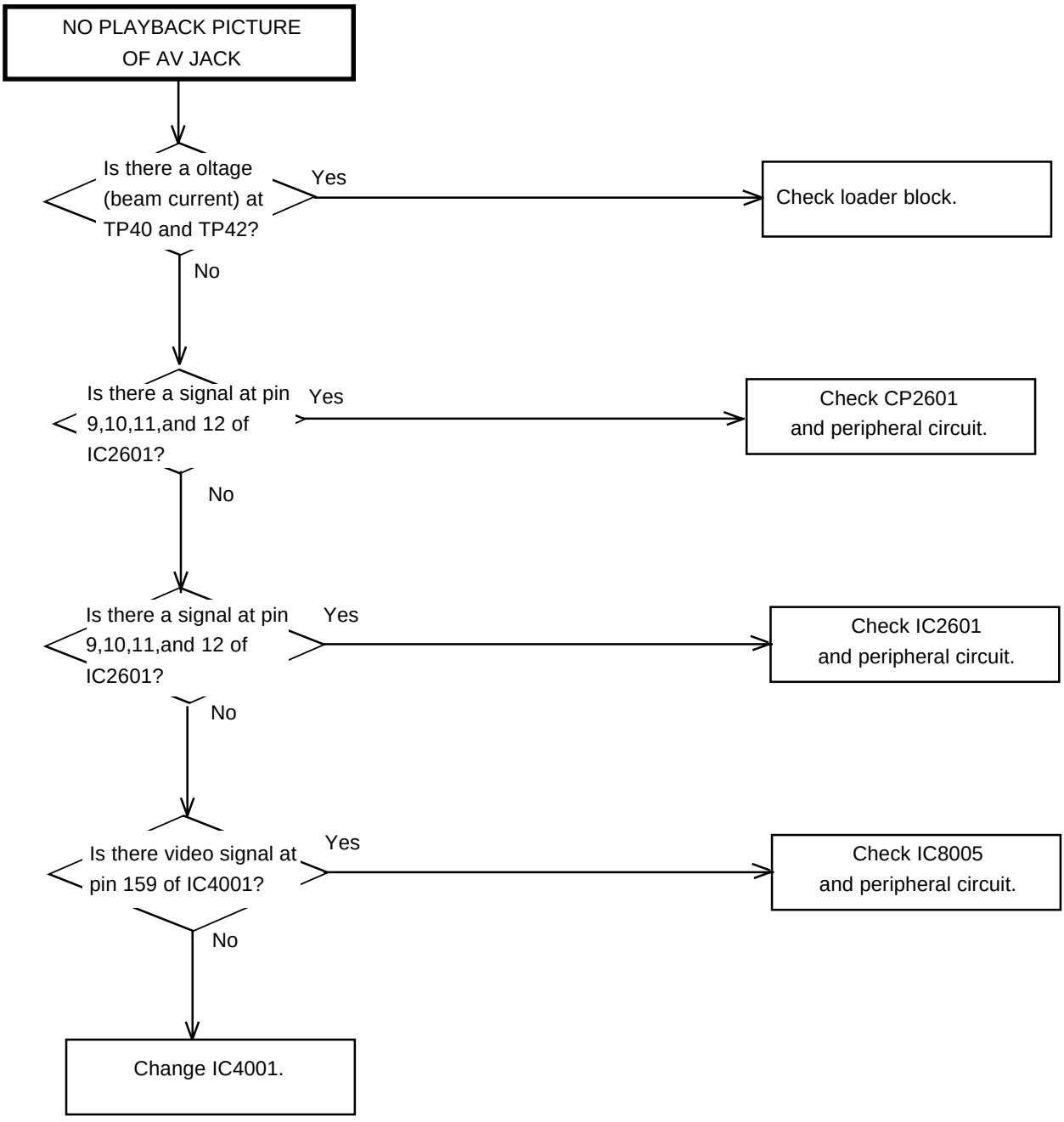

Hi-Fi AUDIO
CAN NOT RECORD
Does E-E AUDIO appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
AT state of video recording, is there audio signal at pin 10 and 15 of IC701?
NO
Check circuit arounf of J602, J603 and TU301.
YES
Is there audio signal at pin 53, 57 of IC701?
NO
Change IC701.
YES
At recording and play,is there signal at pin 7, 8 and 9 of CP101?
NO
Check CYLINDER UNIT.
YES
Check IC701.

TROUBLESHOOTING GUIDE

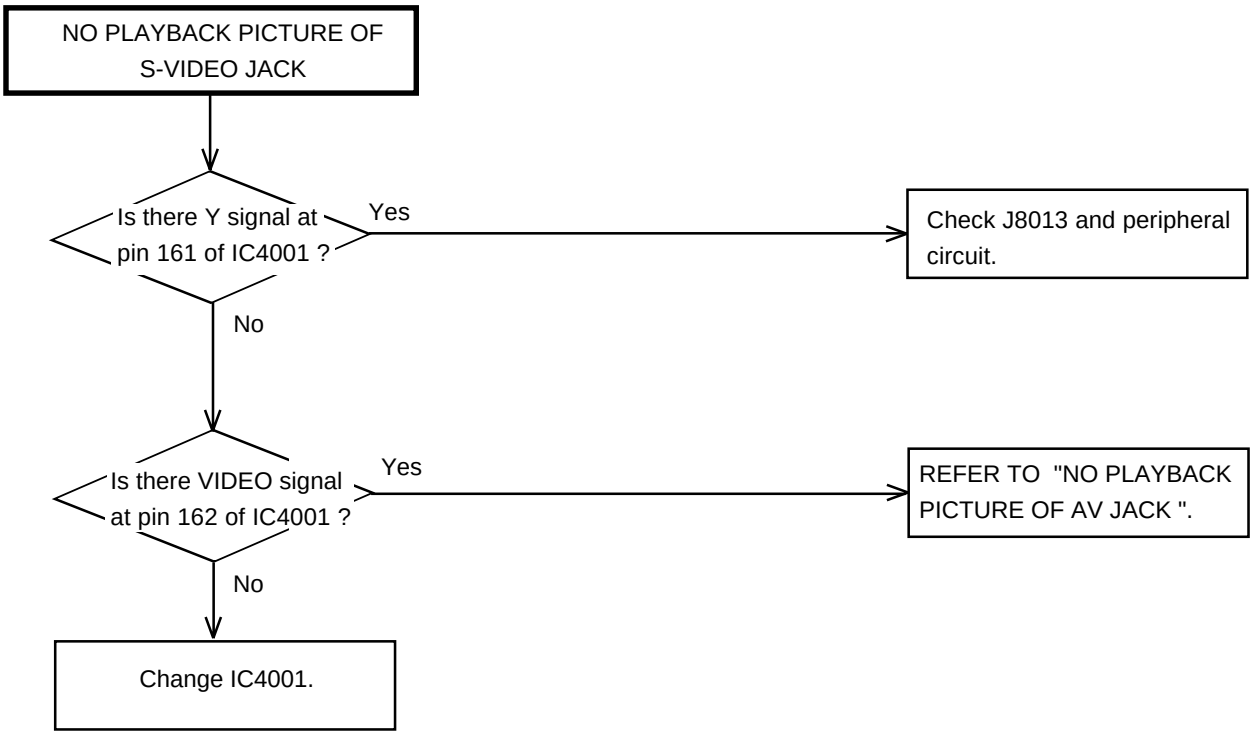
(DVD SECTION)


DECK DOES NOT ACCEPT OPEN/CLOSE
Is the voltage at pin 3 and 14 of IC2301 about DC9V ?
No
Check P.CON 9V line of POWER BLOCK.
Yes
Is the lose connection at CD2602 & CD2603 to DECK ?
Yes
Check CD2602 & CD2603 connection to DECK.
No
Check loader block.

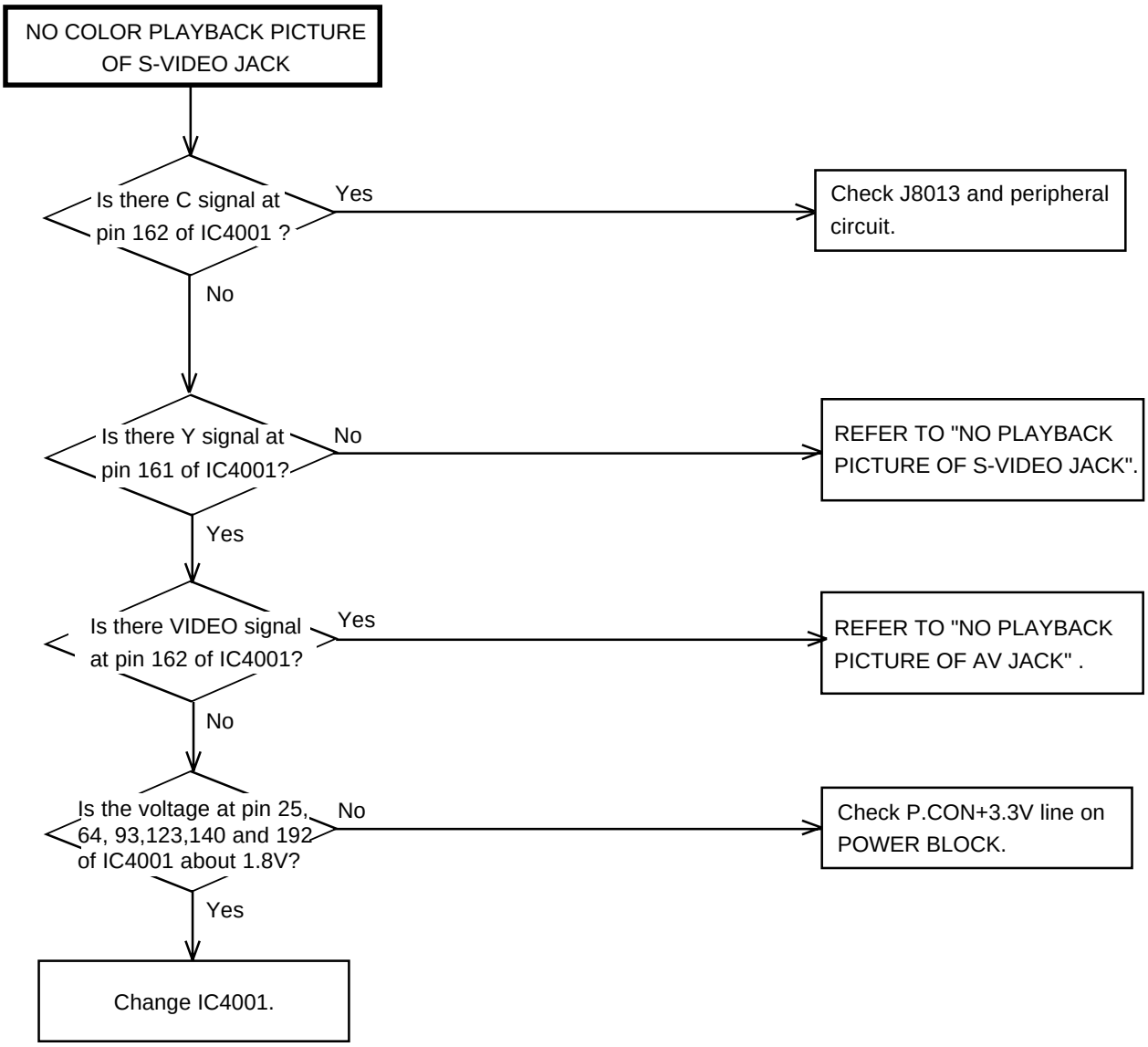
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF AV JACK
Is there a oltage (beam current) at TP40 and TP42?
Yes
Check loader block.
No
Is there a signal at pin 9,10,11,and 12 of IC2601?
Yes
Check CP2601 and peripheral circuit.
No
Is there a signal at pin 9,10,11,and 12 of IC2601?
Yes
Check IC2601 and peripheral circuit.
No
Is there video signal at pin 159 of IC4001?
Yes
Check IC8005 and peripheral circuit.
No
Change IC4001.

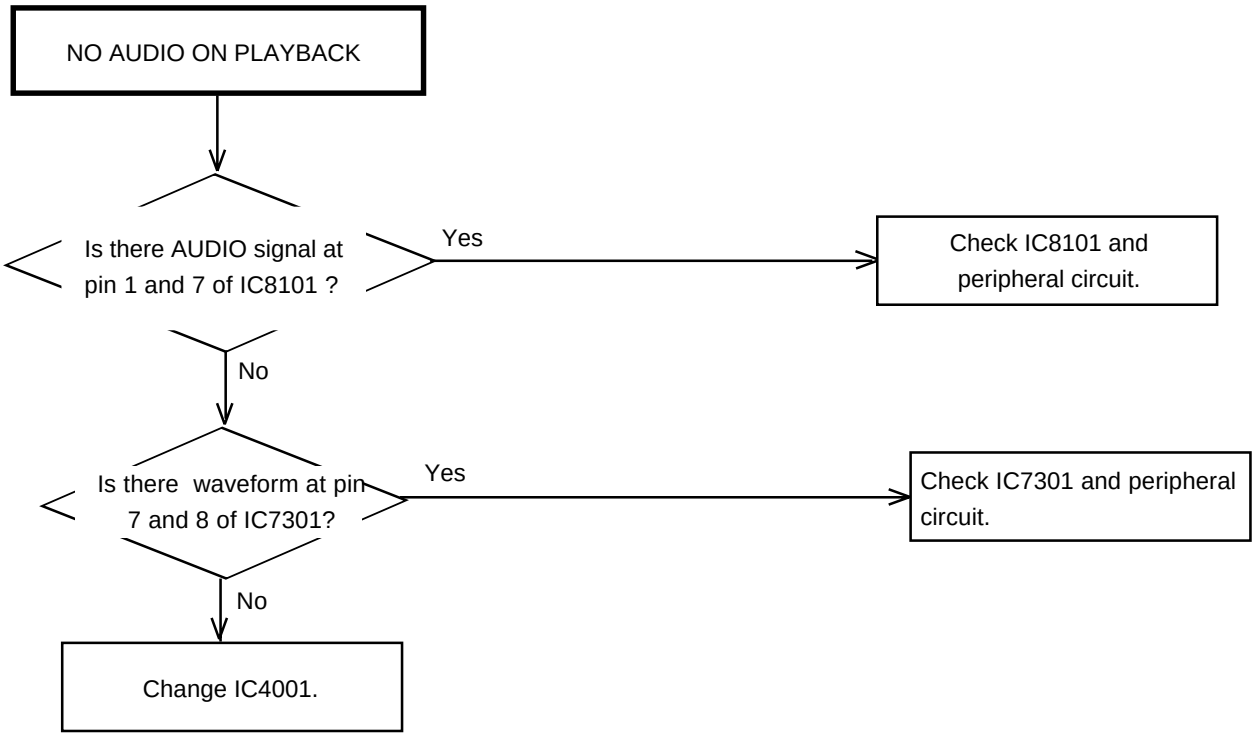
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF S-VIDEO JACK
Is there Y signal at pin 161 of IC4001 ?
Yes
Check J8013 and peripheral circuit.
No
Is there VIDEO signal at pin 162 of IC4001 ?
Yes
REFER TO "NO PLAYBACK PICTURE OF AV JACK ".
No
Change IC4001.

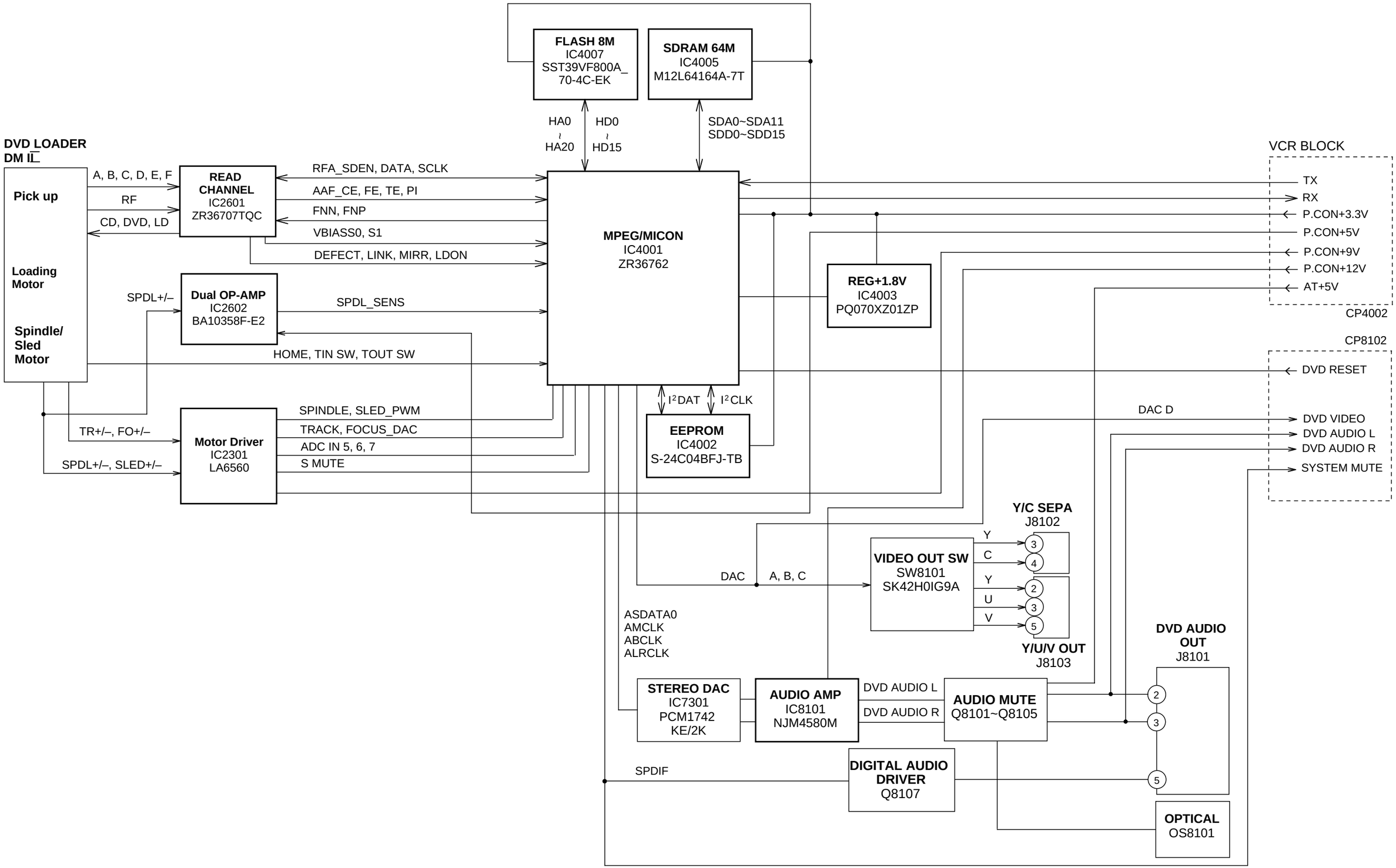
TROUBLESHOOTING GUIDE


NO COLOR PLAYBACK PICTURE OF S-VIDEO JACK
Is there C signal at pin 162 of IC4001 ?
Yes
Check J8013 and peripheral circuit.
No
Is there Y signal at pin 161 of IC4001?
No
REFER TO "NO PLAYBACK PICTURE OF S-VIDEO JACK".
Yes
Is there VIDEO signal at pin 162 of IC4001?
Yes
REFER TO "NO PLAYBACK PICTURE OF AV JACK" .
No
Is the voltage at pin 25, 64, 93,123,140 and 192 of IC4001 about 1.8V?
No
Check P.CON+3.3V line on POWER BLOCK.
Yes
Change IC4001.

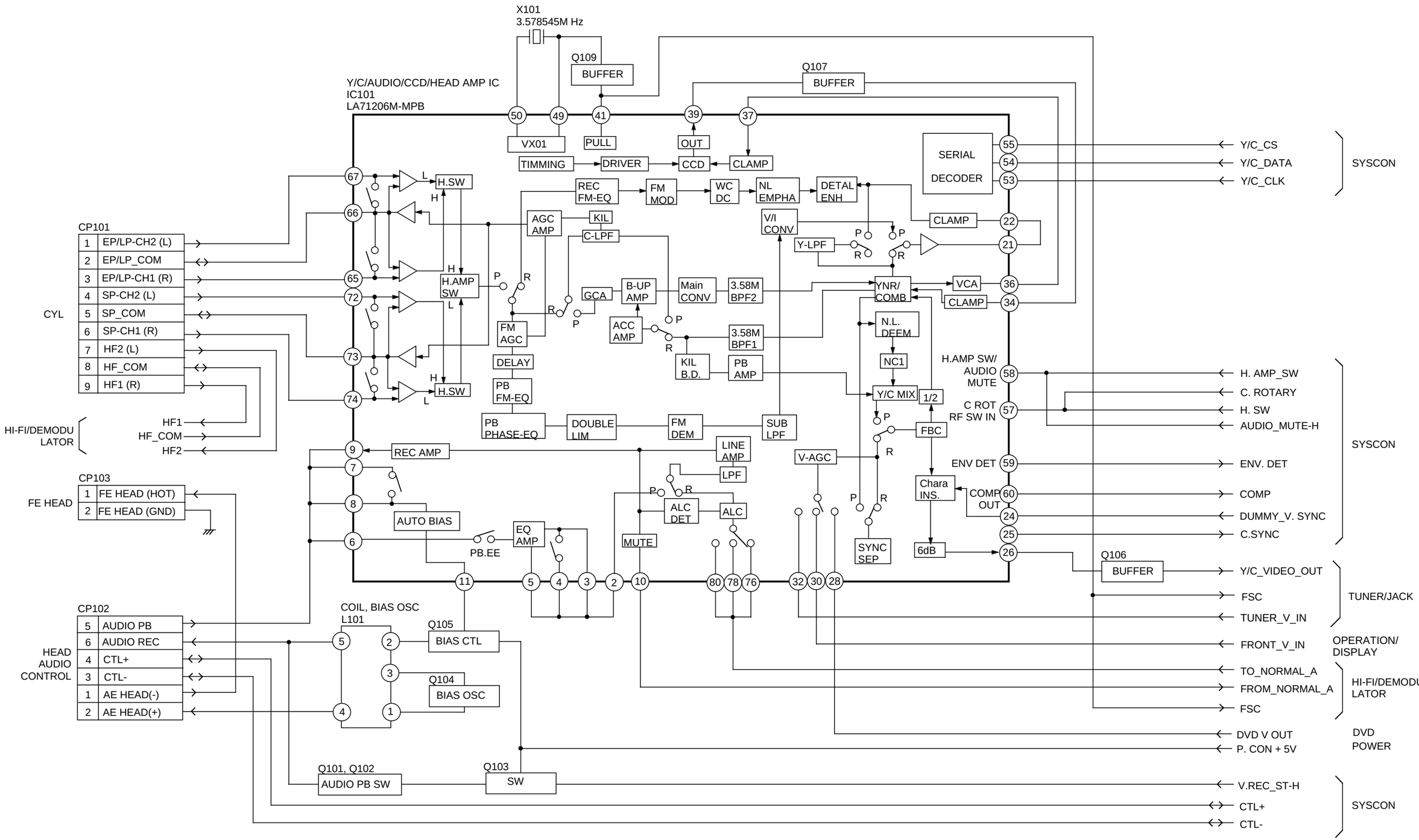
TROUBLESHOOTING GUIDE


NO AUDIO ON PLAYBACK
Is there AUDIO signal at pin 1 and 7 of IC8101 ?
Yes
Check IC8101 and peripheral circuit.
No
Is there waveform at pin 7 and 8 of IC7301?
Yes
Check IC7301 and peripheral circuit.
No
Change IC4001.

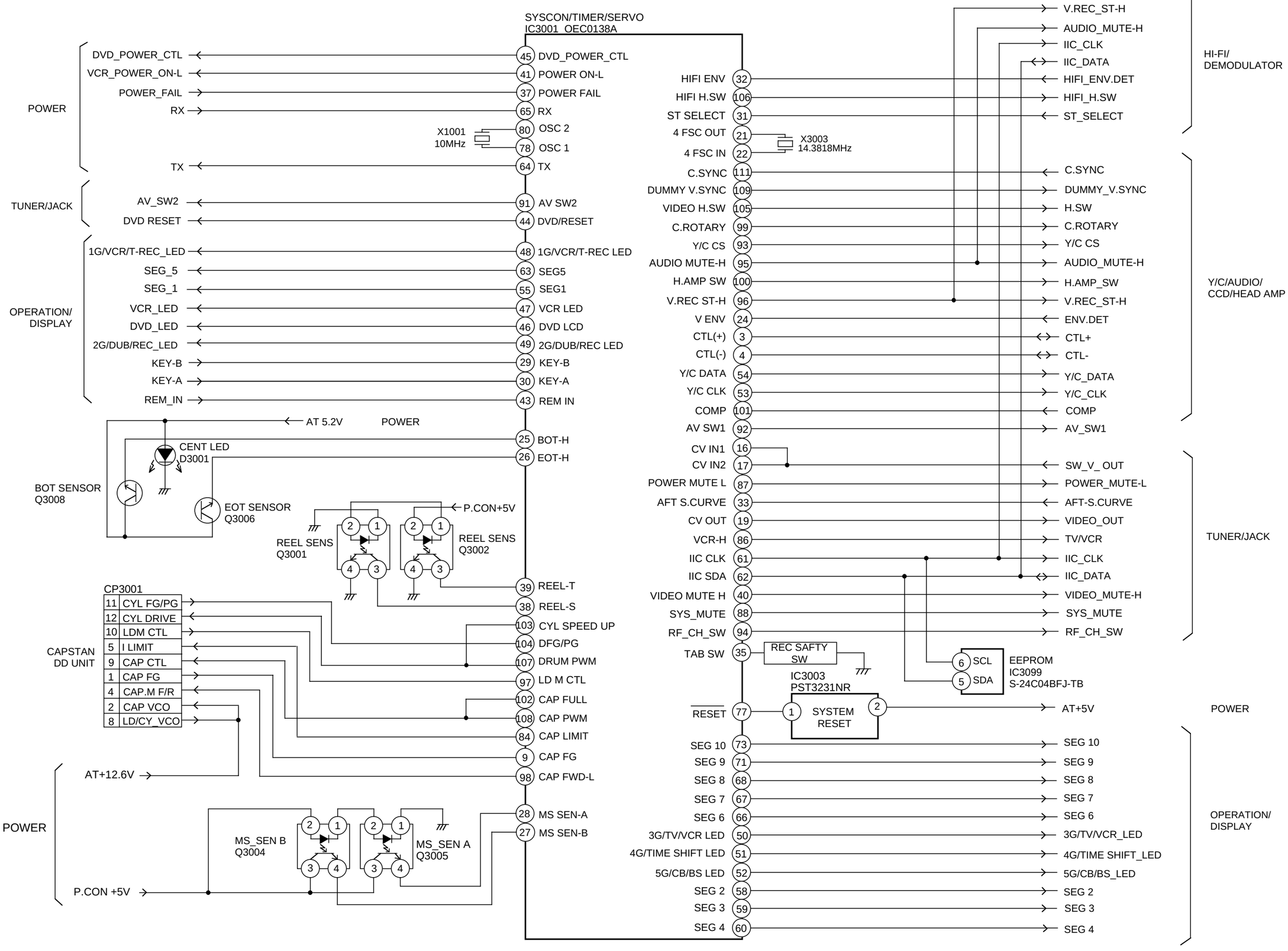
DVD BLOCK DIAGRAM



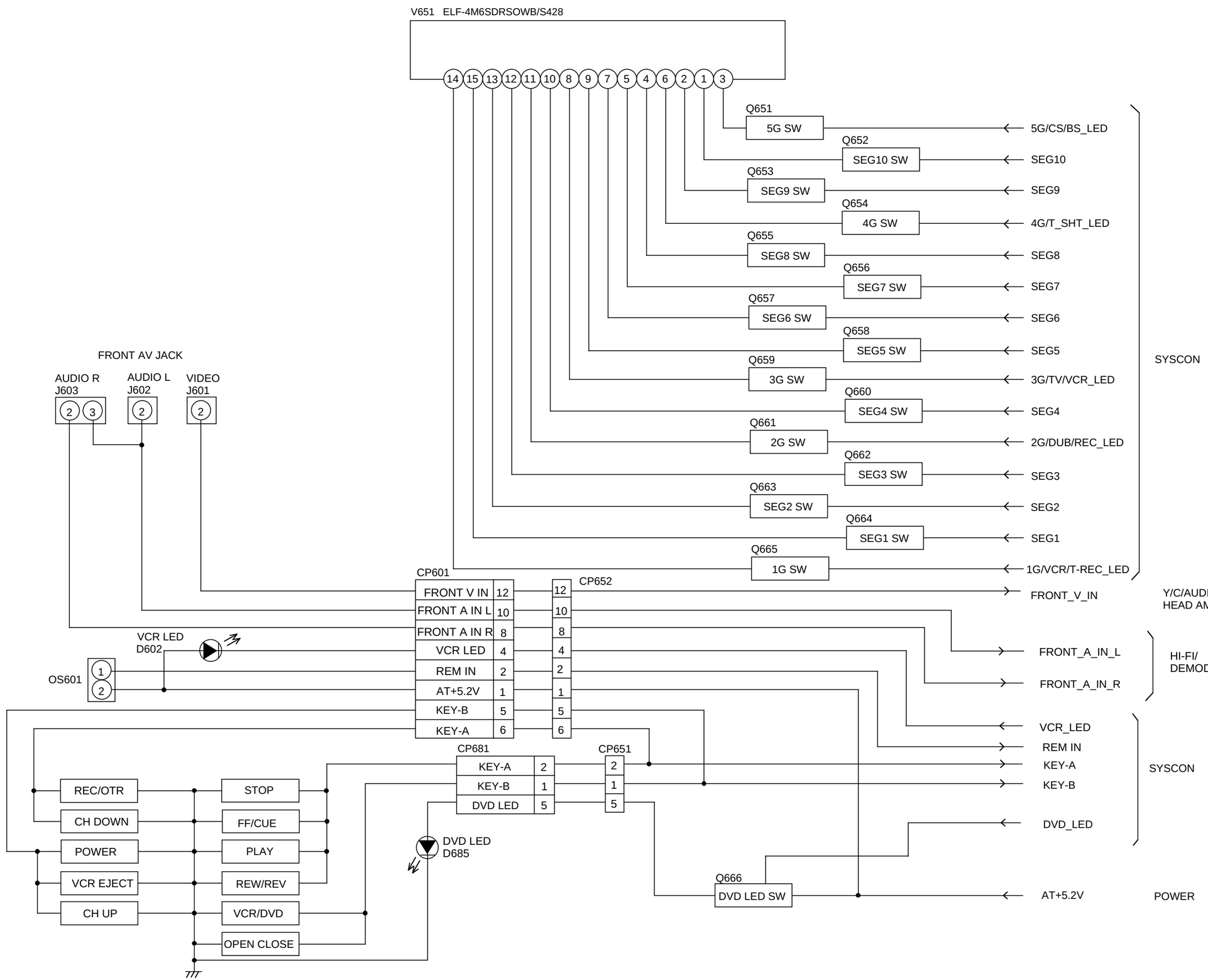
Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM



SYSCON CONTROL BLOCK DIAGRAM

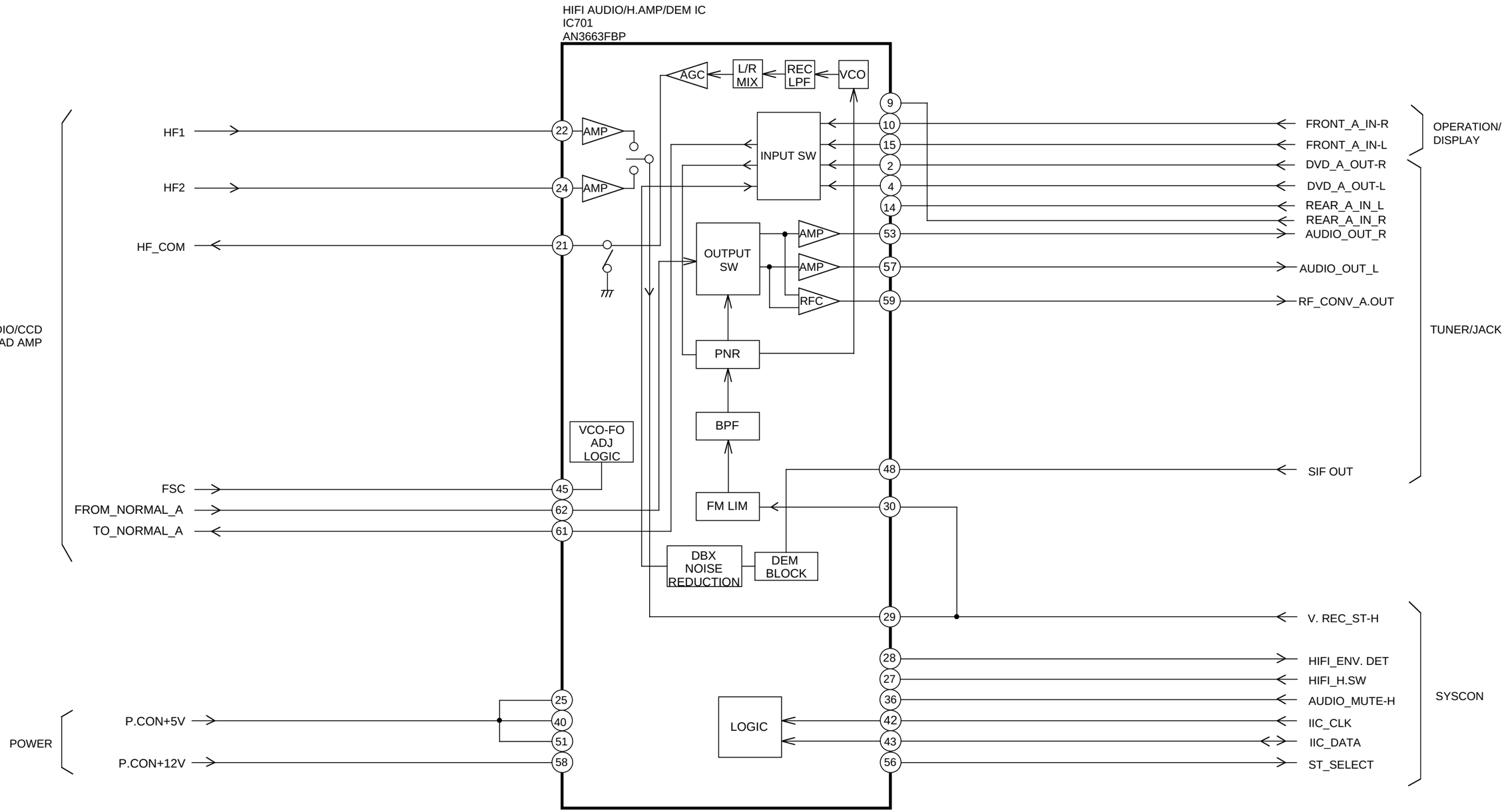


OPERATION/DISPLAY BLOCK DIAGRAM

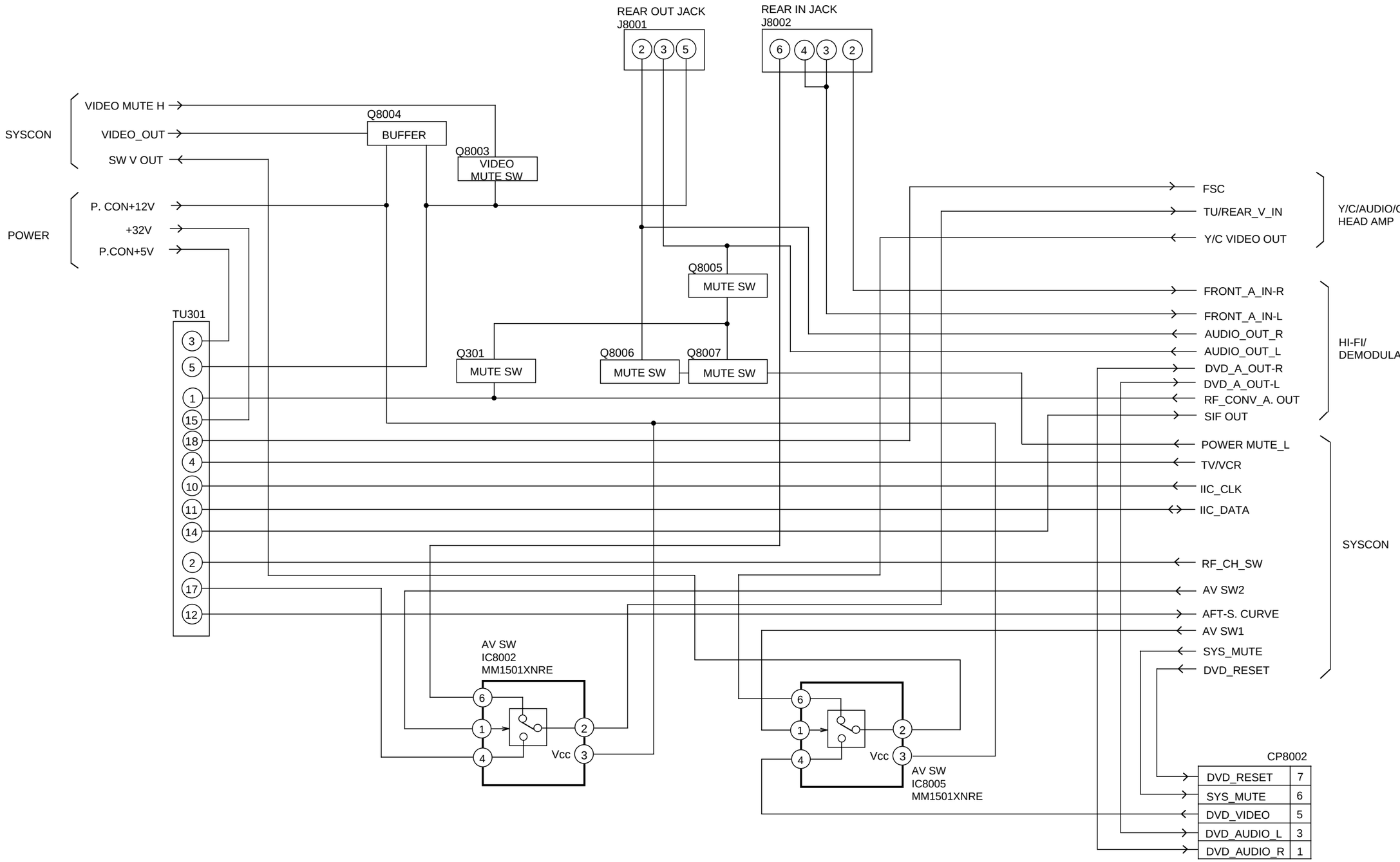


F-7

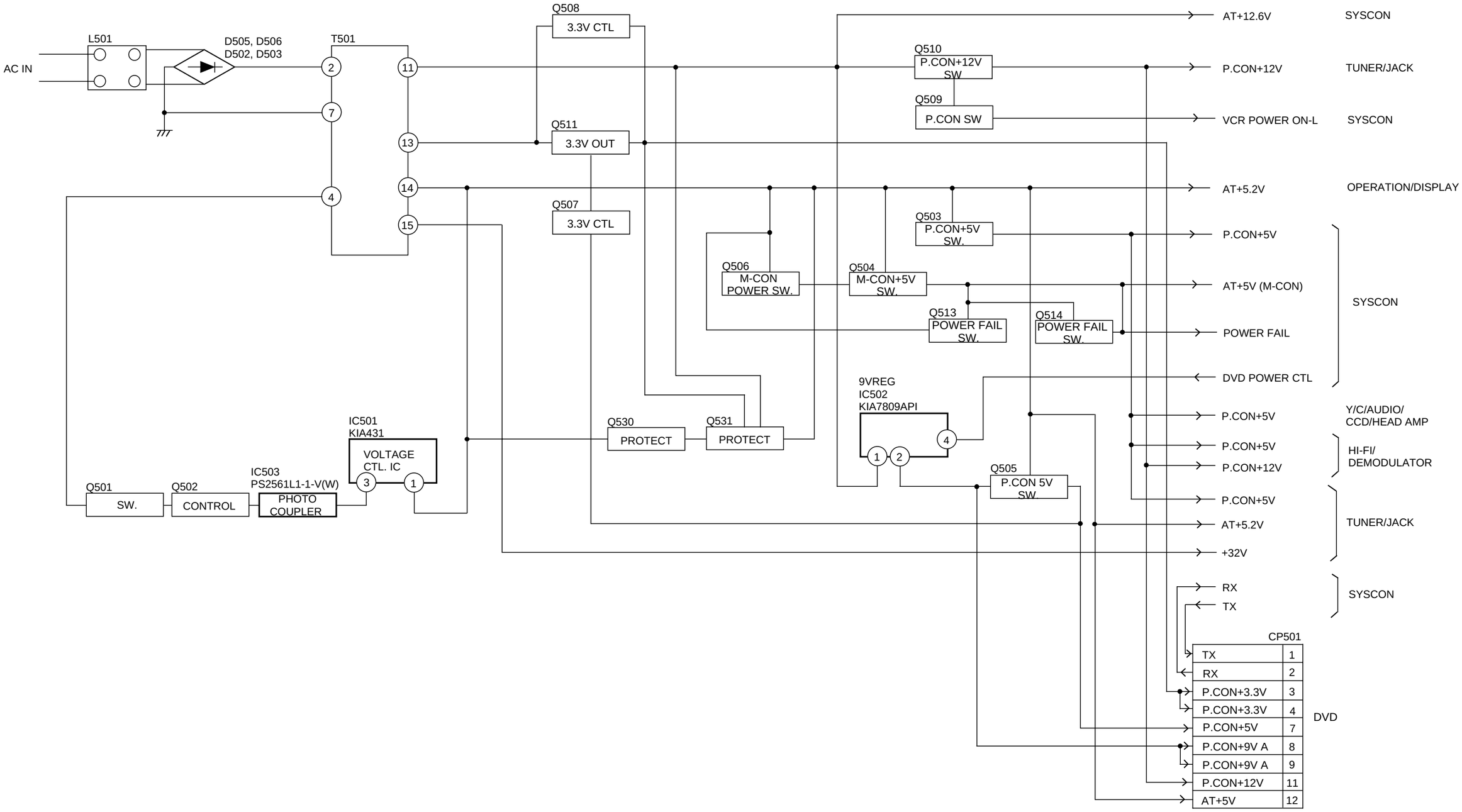
Hi-Fi/DEMODULATOR BLOCK DIAGRAM



TUNER/JACK BLOCK DIAGRAM

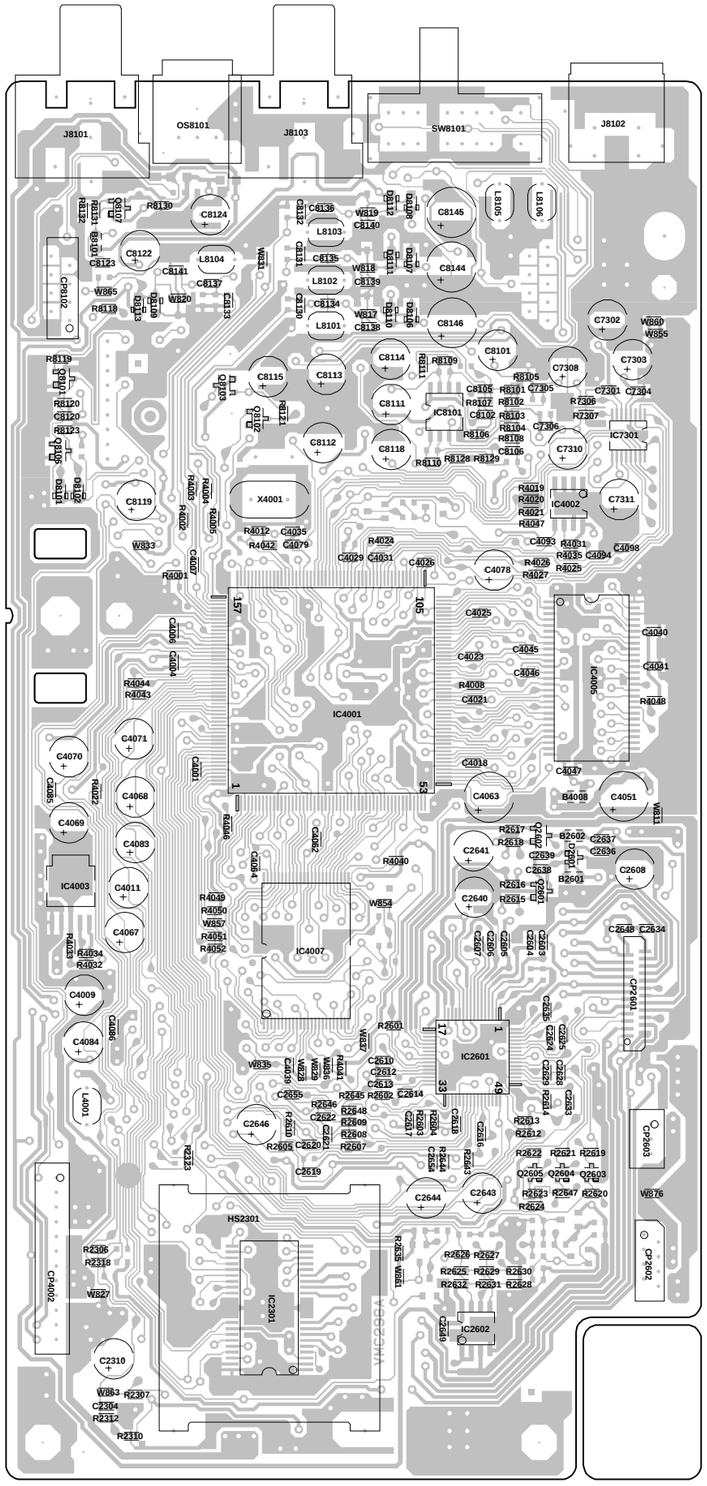


POWER BLOCK DIAGRAM

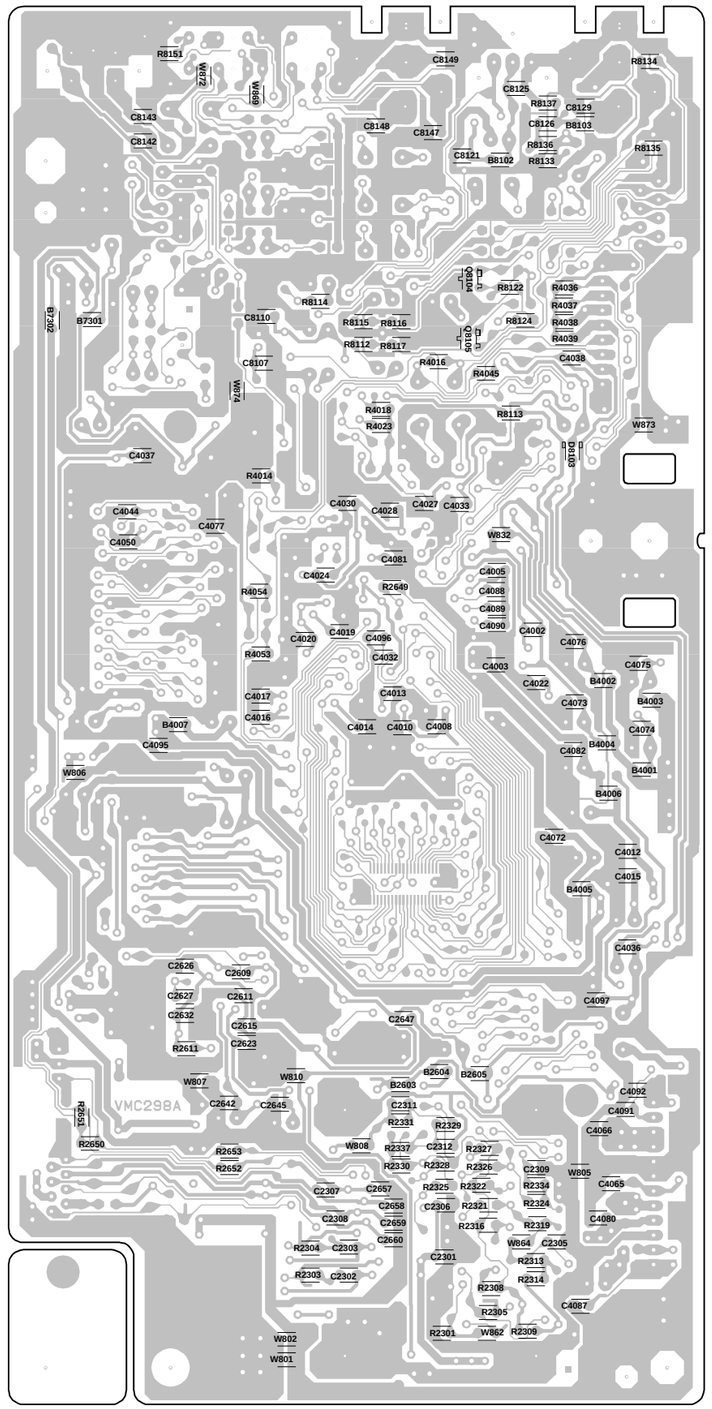


PRINTED CIRCUIT BOARDS

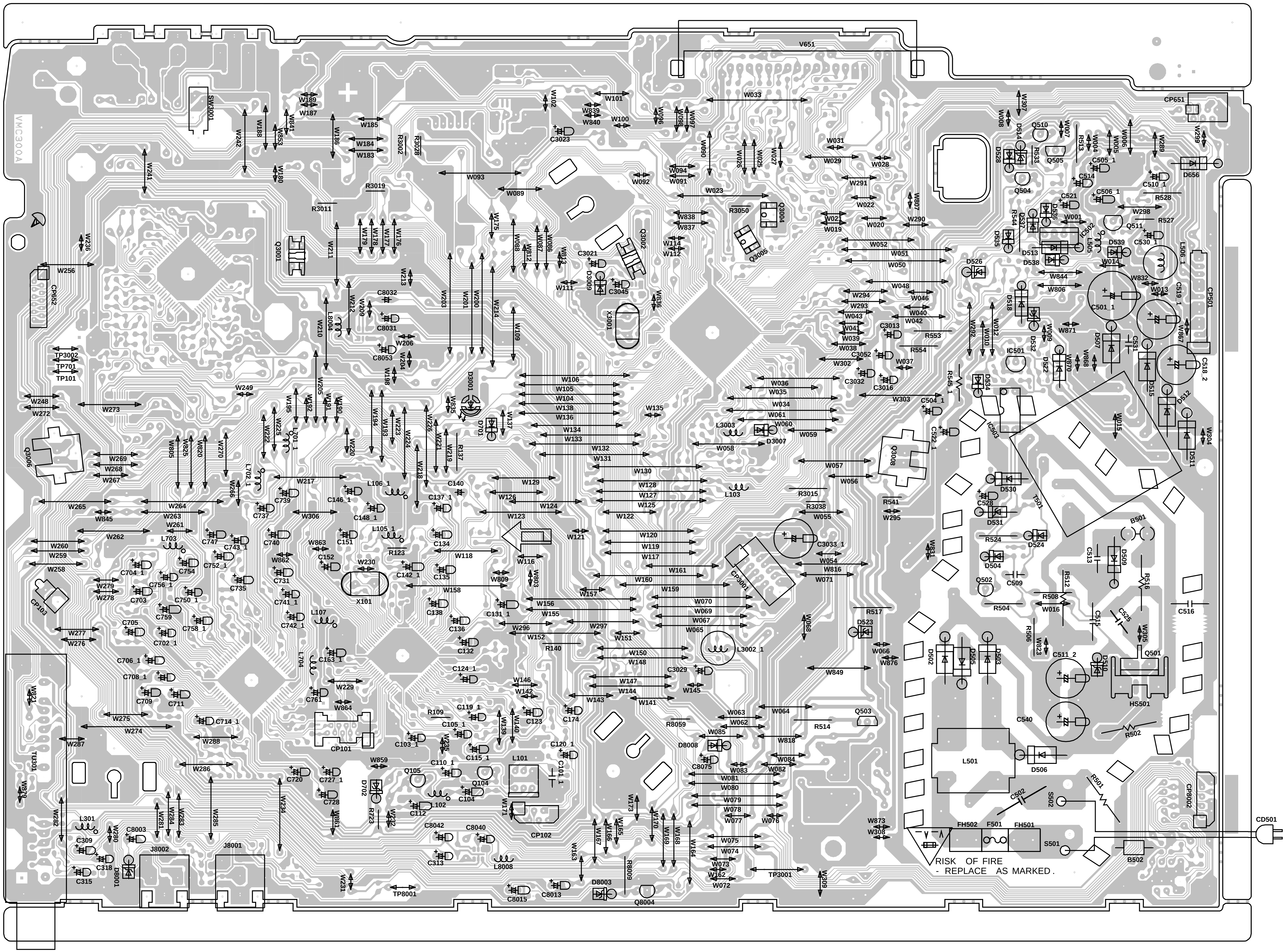
DVD (TOP SIDE)



DVD (BOTTOM SIDE)

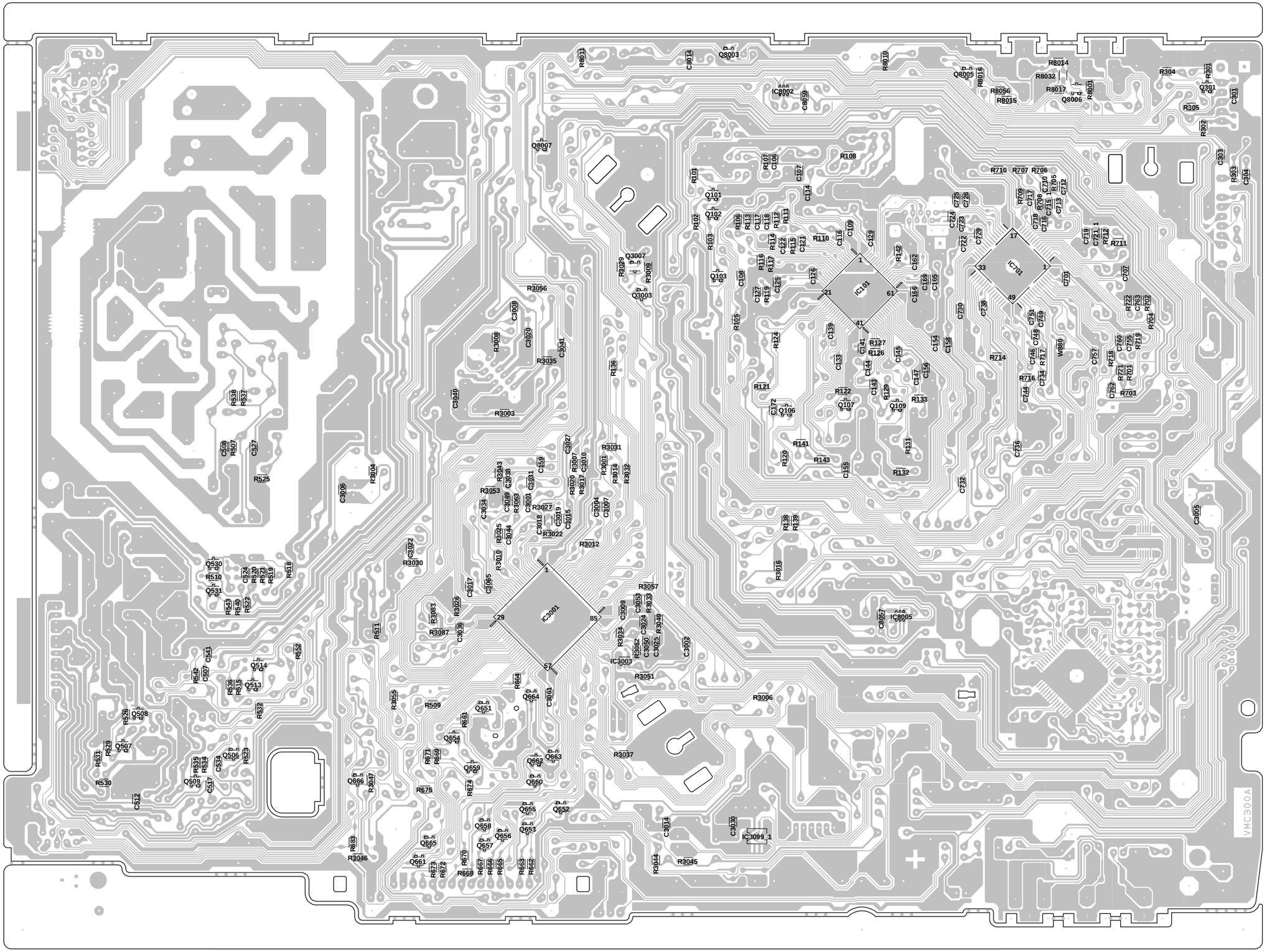


PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE



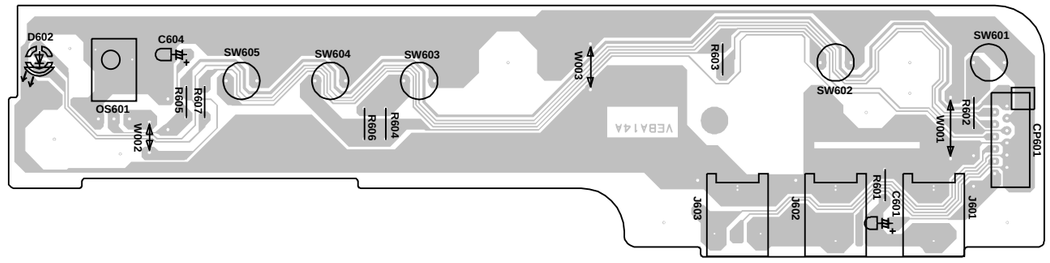
VMC300A
V651
CP651
CP652
CP501
CP103
CP101
CP102
CP3001
CP8002
SW3001
Q3001
Q3002
Q3004
Q3005
Q3006
Q3008
X3001
X101
IC501
IC502
IC503
T501
TU301
J8001
J8002
L501
HS501
D656
D3001
D3007
D3009
D701
D702
D8001
D8003
D8008
Q501
Q502
Q503
Q504
Q505
Q510
Q511
Q104
Q105
Q8004
B501
B502
CD501
FH501
FH502
F501
S501
S502
TP3001
TP3002
TP701
TP101
TP8001
RISK OF FIRE
- REPLACE AS MARKED.

PRINTED CIRCUIT BOARDS
SYSCON (CHIP MOUNTED PARTS)
SOLDER SIDE

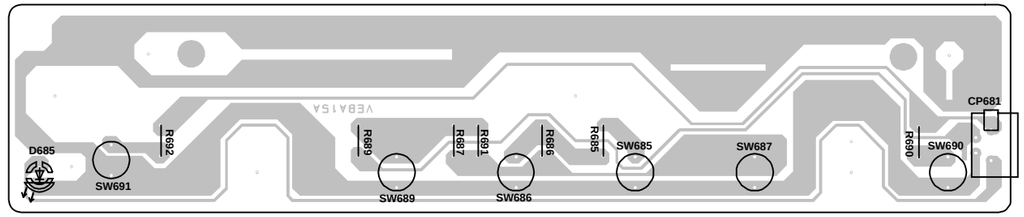


PRINTED CIRCUIT BOARDS

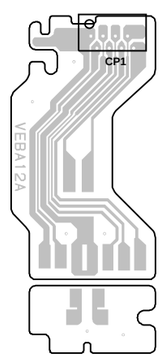
OPERATION 1
SOLDER SIDE



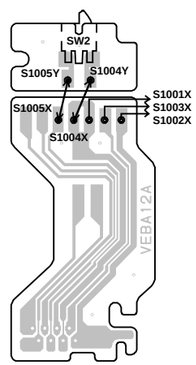
OPERATION 2
SOLDER SIDE



RELAY/SW (INSERTED PARS)
SOLDER SIDE



RELAY/SW (CHIP MOUNTED PARS)
SOLDER SIDE



MPEG/MICON SCHEMATIC DIAGRAM

(DVD PCB)

MPEG/MICON IC
IC4001
ZR36762

FROM/TO MEMORY

FROM/TO AUDIO/VIDEO

FROM/TO RF AMP/DSP

FROM/TO POWER

REG+1.8V IC
IC4003 PQ070XZ01ZP

EEPROM IC
IC4002
S-24C04BFJ-TB

CP4002 (CP501)
A2001WV2-12P

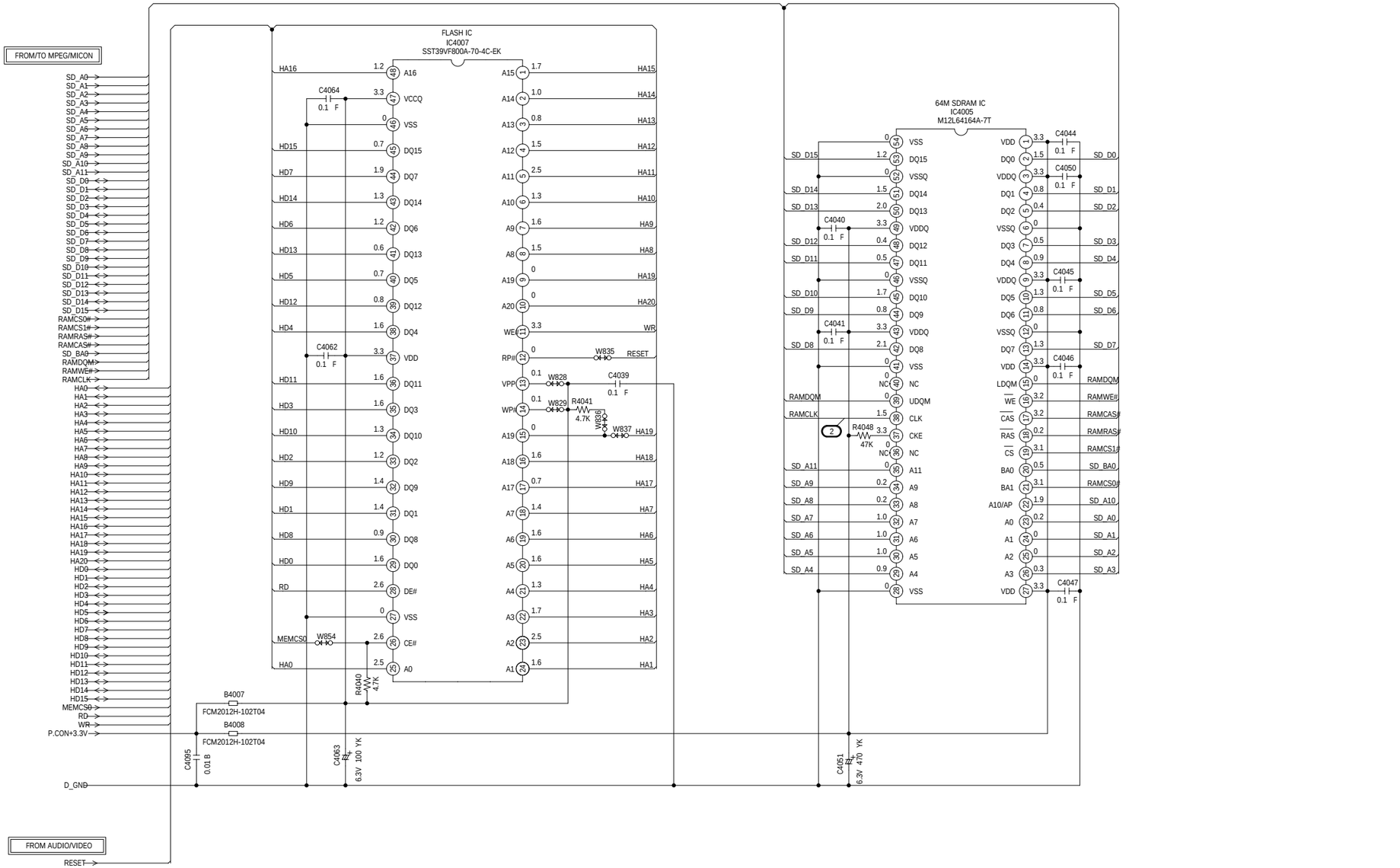
PCB130
VMC298

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

DIGITAL AUDIO SIGNAL(PB)

MEMORY SCHEMATIC DIAGRAM
(DVD PCB)



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NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMC298

RF AMP/DSP SCHEMATIC DIAGRAM

(DVD PCB)

FROM/TO LODER

CP2601
09-5000-024-001

1	T-	TR-
2	T+	TR+
3	F-	FO-
4	F+	FO+
5	MON(DVD)	DVDPD
6	NC(SW)	NC
7	VOL(DVD)	VR_DVD
8	GND(DVD)	
9	LD(DVD)	DVDLD
10	LD(CD)	CDLD
11	VOL(CD)	VR_CD
12	GND(CD)	RF_GND
13	MON(COM)	CDPD
14	GND(NC)	NC
15	RF	OPU_RF
16	C	OPU_C
17	B	OPU_B
18	A	OPU_A
19	D	OPU_D
20	F	OPU_F
21	E	OPU_E
22	VCC	
23	Vref	OPU_VREF
24	GND(PDIC)	

FROM/TO LODER

CP2602
00_6232_008_006

1	SLD-	MOT_SLED-
2	SLD+	MOT_SLED+
3	SP1-	MOT_SPDL-
4	SP1+	MOT_SPDL+
5	LIMIT SW	HOME
6	GND	
7	SP_FG	NC
8	+5V	P.CON+A5V

FROM LODER

CP2603
A2001WV2-3P

1	CLOSE	TIN_SW
2	GND(D)	
3	OPEN	TOUT_SW

FROM/TO MPEG/MICON

SPDL_SENS
TOUT_SW
TIN_SW
RFA_SDEN
RFA_DATA
RFA_SCLK
AAF_CE
AAF_FE
AAF_TE
AAF_PI
VR_SEL
FNN
FNP
VBIASS0
VBIASS1
DEFECT
LINK
MIRR
LDON
HOME
GND
D_GND
P.CON+5V
P.CON+A5V
P.CON+3.3V
SMUTE
TRACK_DAC
FOCUS_DAC
SPINDLE_PWM
SLED_PWM
ADCIN_7
ADCIN_5
ADCIN_6
P.CON+9V
M_GND

READ CHANNEL IC
IC2601
ZR36707TQC

MOTOR DRIVE IC
IC2301
LA6560

DUAL OP-AMP IC
IC2602
BA10358F-E2

HS2301
763WA0I023

B2605 FCM2012H-102T04
B2604 FCM2012H-102T04
B2603 FCM2012H-102T04
B2601 FCM2012H-102T04
B2602 FCM2012H-102T04

D2601 KDS120RTK

DVD LD CTL Q2601 2SA1036K
CD LD CTL Q2602 2SA1036K
VR DVD CTL Q2603 2SK3018
VR CD CTL Q2604 2SK3018
VR SEL CTL Q2605 2SK3018

PCB130
VMC298

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

AUDIO/VIDEO SCHEMATIC DIAGRAM
(DVD PCB)

FROM/TO MPEG/MICON

P.CON+A5V
DAC_VIDEO_A
DAC_VIDEO_C
DAC_VIDEO_B
DAC_VIDEO_D
P.CON+5V
P.CON+3.3V
AT+5V
P.CON+12V
V_SW
RESET
MC
MD
ML
AMCLK
ABCLK
ALRCLK
ASDATA0
SPDIF
GND
D_GND

DVD_AUDIO_L
DVD_AUDIO_R
R8134 470
R8135 470

B8102 FCM2012H-102T04
B8101 FCM2012H-102T04
B8103 FCM2012H-102T04
DVD AUDIO OUT J8101 MSP-213V1-732_PB

OPTICAL OS8101 OFTG038101
1 INPUT
2 VCC
3 GND

D AUDIO DRIVER Q8107 KTC3875S_Y_RTK

C8121 0.01 B
C8123 0.022 B
C8125 0.1 F
C8122 16V 47 YK
C8124 16V 47 YK
C8126 0.1 B
C8129 100P CH
C8137 12P CH
C8133 150P CH
C8141 150P CH
L8104 1uH 0305
R8130 2.2K
R8131 1.5K
R8132 3.3K
R8133 220
R8136 68
R8137 100K

W860
W855
W873
W874

C8134 12P CH
C8135 12P CH
C8136 12P CH
L8101 1uH 0305
L8102 1uH 0305
L8103 1uH 0305
C8130 150P CH
C8138 150P CH
C8131 150P CH
C8139 150P CH
C8132 150P CH
C8140 150P CH
C8133 150P CH
C8141 150P CH

W817
W818
W819
W820

D8110 MCL4148
D8111 MCL4148
D8112 MCL4148
D8113 MCL4148
D8106 MCL4148
D8107 MCL4148
D8108 MCL4148
D8109 MCL4148

C8144 6.3V 470 YK
C8146 6.3V 470 YK
C8145 6.3V 470 YK
W865
DAC_D_DVD_VIDEO

W869
L8105 0.33uH 0305
W872
L8106 0.33uH 0305

Y/C SEPA J8102 MDC-070V
C
Y

C8142 10P CH
C8143 10P CH
C8147 33P CH
C8149 33P CH
C8148 33P CH

YUV OUT J8103 MSP-213V1-652_PBSN

R8151 10K

NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC NC

S/CVBS ⟷ COMP
VIDEO OUT SW SW8101 SK42H0IG9A

V_SW

TO MEMORY

RESET

B7301 FCM2012H-102T04
B7302 FCM2012H-102T04

C7301 0.1 F
C7302 16V 100 YK
C7303 50V 22 YK
C7304 0.1 F

R7307 10K
C7310 50V 2.2 YK
R7306 10K
C7308 50V 2.2 YK

C7305 CH 820P
C7306 CH 820P
C8118 50V 2.2 YK
R8128 1K
R8129 10K
R8110 12K
C8107 100P CH
C8106 0.0015 B
R8104 10K
R8108 10K
C8112 50V 22 YK
R8112 470

R_AUDIO
L_AUDIO

P.CON+12V
C8119 6.3V 220 YK
C8120 220P CH
D8103 MCL4148
R8123 4.7K

MUTE SW Q8106 KRC104SRTK
ZERO
SYS_MUTE

STEREO DAC IC IC7301 PCM1742KE/2K
VOUTR VOUTL VCC VDD DGND LRCK DATA BCK
AGND VCOM ZEROR/ZEROA ZEROL/NA MD MC ML SCK
NC

AUDIO_AMP IC IC8101 NJM4580M
A_GND VCC

R8103 100K
R8102 100K
R8106 47K
R8113 56
C8113 50V 22 YK
R8115 470
C8110 0.1 F
C8111 16V 100 YK
R8111 10K
R8114 1K
C8114 50V 2.2 YK
C8101 50V 33 YK
R8105 10K
C8102 100P CH
R8109 12K
R8116 10K
R8117 10K
R8118 1K
R8119 470K

MUTE DET Q8101 KTC3875S_Y_RTK

MUTE SW. Q8103 KRA101SRTK
MUTE SW Q8105 KTC3875S_Y_RTK
MUTE SW.0 Q8102 KRC103SRTK
MUTE SW Q8104 KTC3875S_Y_RTK

R8120 4.7K
D8102 MCL4148
R8121 3.3K
R8124 1K
R8122 1K
D8101 MCL4148
C8115 50V 4.7 YK

C7311 50V 10 YK

DVD_AUDIO_R
DVD_AUDIO_L
DAC_D_DVD_VIDEO
SYS_MUTE
RESET

FRON/TO TUNER/JACK
CP8102 (CP8002) IMSA-9604S-08C

DVD_AUDIO_R	8
GND	7
DVD_AUDIO_L	6
GND	5
DAC_D_DVD_VIDEO	4
SYS_MUTE	3
DVD_RESET	2
NC	1

PCB130
VMC298

AUDIO SIGNAL(PB)
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK VIDEO SIGNAL
DIGITAL AUDIO SIGNAL(PB)
R.SIGNAL + COMPONENT SIGNAL(U)
B.SIGNAL + COMPONENT SIGNAL(V)

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM

(VCR PCB)

FROM POWER
P.CON+5V
GND

FROM/TO HI-FI/DEMODULATOR
FSC
TO_NORMAL_A
FROM_NORMAL_A
HF1
HF_COM
HF2
A.VCC

FROM/TO CYL
CP101
TOC-C09X-A1

9	HF1 (R)
8	HF_COM
7	HF2 (L)
6	SP-CH1 (R)
5	SP_COM
4	SP-CH2 (L)
3	EP/LP-CH1 (R)
2	EP/LP COM
1	EP/LP-CH2 (L)

FROM/TO HEAD AUDIO CONTROL
CP102
IMSA-9604S-06C

6	AUDIO REC
5	AUDIO PB
4	CTL+
3	CTL-
2	AE HEAD(+)
1	AE HEAD(-)

FFC
CD102
2H061504

TO FULL ERASE HEAD
CP103
B2013H02-2P

2	FE HEAD(GND)
1	FE HEAD(HOT)

FROM/TO TUNER/JACK
DVD_V_OUT[DAC_D]
TU/REAR_V_IN
Y/C_VIDEO_OUT
FSC

FROM OPERATION/DISPLAY
FRONT_V_IN

FROM/TO SYSCON
4FSC
Y/C_CLK
Y/C_DATA
Y/C_CS
DUMMY_V.SYNC
V.REC_ST-H
C.ROTARY
AUDIO_MUTE-H
CTL-
CTL+
H.AMP_SW
COMP
ENV.DET
H.SW
C.SYNC

Y/C/AUDIO/CCD/HEAD AMP IC
IC101
LA71206M-MPB

BUFFER Q109 KTC3875S_Y_RTK
BUFFER Q107 KTA1504S_Y_RTK
BUFFER Q106 KTA1504S_Y_RTK
AUDIO PB SW Q101 KTC3875S_Y_RTK
AUDIO PB SW Q102 KTC3875S_Y_RTK
SW Q103 DTA124EKA
BIAS CTL Q105 KTA1266
BIAS OSC Q104 KTC3203_Y
COIL,BIAS OSC L101 1626009
X101 100DT3R528 3.579545MHz
SERIAL DECODER
V.ENV TP101 NC

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)
PLAYBACK VIDEO SIGNAL
TUNER VIDEO SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL

PCB010
VMC300

SYSCON SCHEMATIC DIAGRAM
(VCR PCB)

FROM/TO POWER
TX
RX
DVD_POWER_CTL
AT+12.6_V
P.CON+5V
AT+5V[M-CON]
VCR_POWER_ON-L
POWER_FAIL
AT+5.2V
GND
MOTOR_GND

FROM/TO DECK
CP3001
TMC-J12P-B2
1 CAP FG
2 CAP VCO
3 VCC
4 CAP.M/F/R
5 I LIMIT
6 MOTOR GND
7 GND
8 LD/CY VCO
9 CAP CTL
10 LDM CTL
11 CYL FG/PG
12 CYL CTL

SYSCON/TIMER/SERVO IC
IC3001
OEC0138A

FROM/TO Y/C/AUDIO/CCD/HEAD AMP
DUMMY_V.SYNC
C.SYNC
V.REC_ST-H
C.ROTARY
AUDIO_MUTE-H
CTL-
CTL+
H.AMP_SW
COMP
ENV.DET
H.SW
Y/C_CS
Y/C_DATA
Y/C_CLK
4FSC

FROM/TO TUNER/JACK
RF_CH_SW
SW_V_OUT
AV_SW1
AV_SW2
SCL
SDA
AFT-S.CURVE
TV/VCR
VIDEO_OUT
POWER_MUTE-L
VIDEO_MUTE-H
DVD_RESET
SYS_MUTE

FROM/TO HI-FI/DEMODULATOR
V.REC_ST-H
HIFI_ENV.DET
HIFI_H.SW
AUDIO_MUTE-H
SCL
SDA
ST_SELECT

FROM/TO OPERATION1/DISPLAY
DVD_LED
VCR_LED
KEY-A
KEY-B
REM_IN
1G/VCR/T-REC_LED
2G/DUB/REC_LED
3G/TV/VCR_LED
4G/VSC_LED
5G/CS/BS_LED
SEG_1
SEG_2
SEG_3
SEG_4
SEG_5
SEG_6
SEG_7
SEG_8
SEG_9
SEG_10

◀ PLAYBACK LUMINANCE SIGNAL
◁ PLAYBACK COLOR SIGNAL
◀◀ RECORD LUMINANCE SIGNAL
◁◁ RECORD COLOR SIGNAL

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

PCB010
VMC300

TUNER/JACK SCHEMATIC DIAGRAM

(VCR PCB)

TU301
115-V-H015ARE

RF MUTE SW
Q301
KTC3875S_Y_RTK

R305 1K
R301 33K
W861 W862 W863 W864

REAR OUT JACK
J8001
MSP-213V1-432_PBSN

VIDEO OUT
TP8001

A.IN 1 — C315 16V 10 KA — R304 10K — C318 16V 10 KA — RF_CONV_A_OUT
CH 2 — RF_CH_SW
+B 3 — L301 22uH 0305 — P.CON+5V
CONTROL 4 — TV/VCR
V.IN 5 — R302 1K — C301 0.01 F — C309 220 YK 6.3V
NC 7 — NC
FSC 8 — R303 150 — W879 — C304 0.01 B — FSC
NC 9 — NC
CLOCK 10 — SCL
DATA 11 — SDA
AFT 12 — AFT-S.CURVE
NC 13 — NC
SIF OUT 14 — W821
TU 32V 15 — +32V
NC 16 — NC — C303 0.1 F
V.OUT 17 — C313 16V 10 KA — TU_V_OUT

R8010 75
C8015 470 YK 6.3V
D8003 MTZJ6.8B
C8014 0.1 F
C8013 50V 10 YK
P.CON+12V
R8009 470 1/2W

VIDEO MUTE SW
Q8003
DTC124EKA
VIDEO_MUTE-H

BUFFER
Q8004
KTA1266

R8011 100

R8014 390
R8015 390
R8032 470
R8056 470

MUTE SW
Q8006
KTC3875S_Y_RTK
R8017 2.2K

MUTE SW
Q8005
KTC3875S_Y_RTK
R8016 2.2K

MUTE SW
Q8007
DTA124EKA

C8075 50V 4.7 KA
R8059 4.7K 1/4W
D8008 1SS133

W853

REAR IN JACK
J8002
MSP-213V2-432_PBSN
R8001 75

C8003 50V 10 YK
D8001 MTZJ6.8B

SIF_OUT — TU/REAR_V_IN — C8040 50V 4.7 KA

AV SW IC
IC8002
MM1501XNRE
REAR_V_IN — Vin1 — SW
GND — V OUT
TU_V_OUT — Vin2 — Vcc
C8059 0.1 F
L8008 47uH
C8042 16V 10 KA

AV SW IC
IC8005
MM1501XNRE
C8031 50V 4.7 KA
C8032 16V 4.7 KANP
C8057 0.1 F
C8053 16V 10 KA
L8004 47uH

AV_SW2
P.CON+12V
REAR_A_IN_R
REAR_A_IN_L
REAR_V_IN
Y/C_VIDEO_OUT
DVD_V_OUT[DAC_D]

AUDIO_OUT_R
AUDIO_OUT_L
AT+5.2V
POWER_MUTE-L
P.CON+5V
VIDEO_OUT
AV_SW1
SW_V_OUT
P.CON+12V
AUDIO_OUT_L
AUDIO_OUT_R
RF_CONV_A_OUT

W805 W820 W825

FROM/TO AUDIO/VIDEO
CP8002 (CP8102)
IMSA-9604S-08C
NC 8
DVD_RESET 7 — DVD_RESET
SYS_MUTE 6 — SYS_MUTE
DAC_D_DVD_VIDEO 5 — DVD V OUT[DAC_D]
GND 4
DVD_AUDIO_L 3 — DVD A OUT L
GND 2
DVD_AUDIO_R 1 — DVD A OUT R
FFC
CD8002
2F080601

FROM/TO Y/C/AUDIO/CCD/HEAD AMP
DVD_V_OUT[DAC_D]
FSC
TU/REAR_V_IN
Y/C_VIDEO_OUT

FROM/TO SYSCON
DVD_RESET
SYS_MUTE
SCL
SDA
AV_SW1
AV_SW2
TV/VCR
RF_CH_SW
AFT-S.CURVE
POWER_MUTE-L
VIDEO_MUTE-H
VIDEO_OUT
SW_V_OUT

FROM/TO HI-FI/DEMODULATOR
DVD_A_OUT_R
DVD_A_OUT_L
SIF_OUT
REAR_A_IN_L
REAR_A_IN_R
AUDIO_OUT
HIFI_A_OUT_R
HIFI_A_OUT_L

FROM POWER
GND
+32V
AT+5.2V
P.CON+5V
P.CON+12V

PCB010
VMC300

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

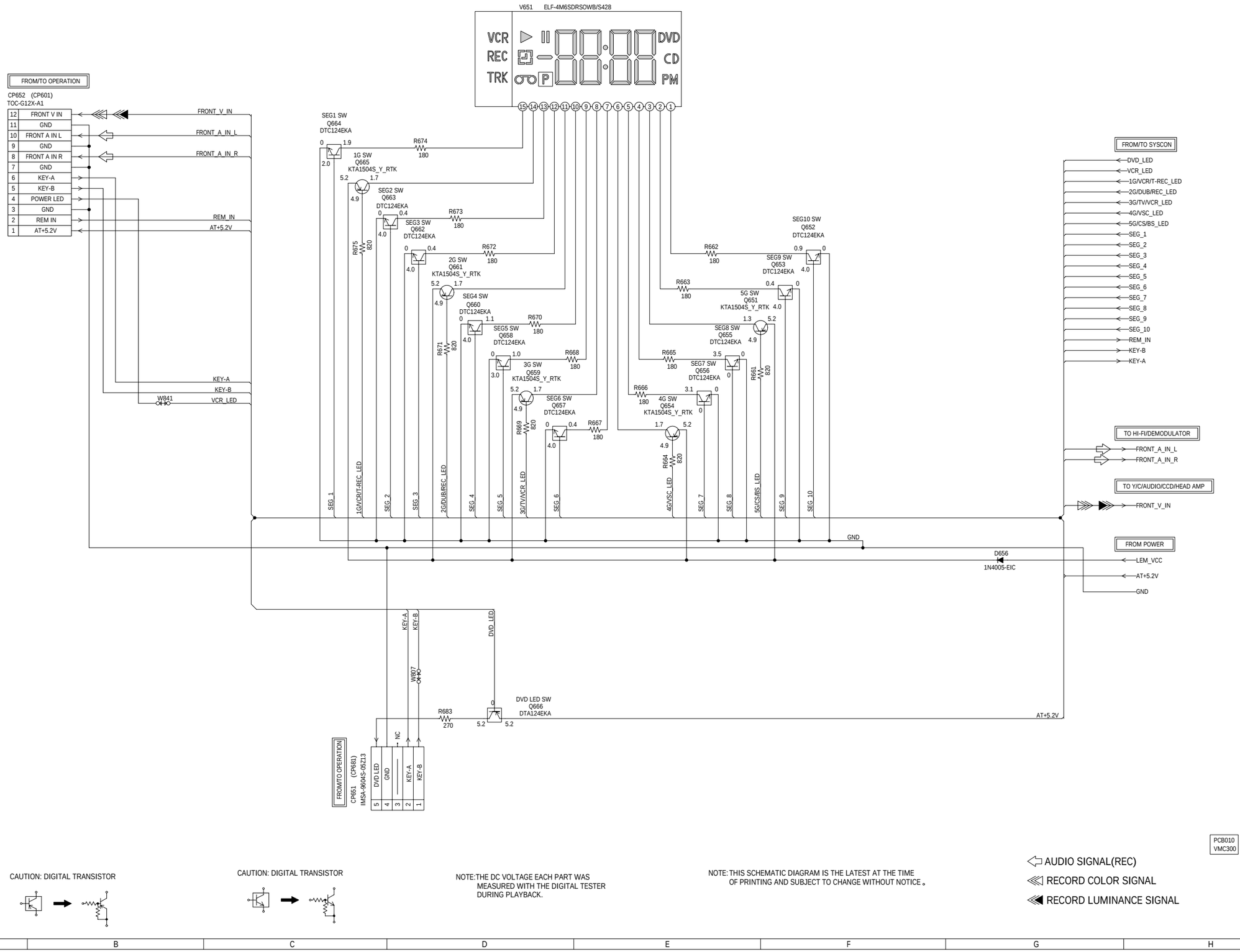
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
⋘ RECORD COLOR SIGNAL
⋘ RECORD LUMINANCE SIGNAL
⇦ AUDIO SIGNAL(REC)
⬅ AUDIO SIGNAL(PB)
◁◁ TUNER VIDEO SIGNAL
⋘◁ PLAYBACK VIDEO SIGNAL

OPERATION/DISPLAY SCHEMATIC DIAGRAM
(VCR PCB)



CAUTION: DIGITAL TRANSISTOR

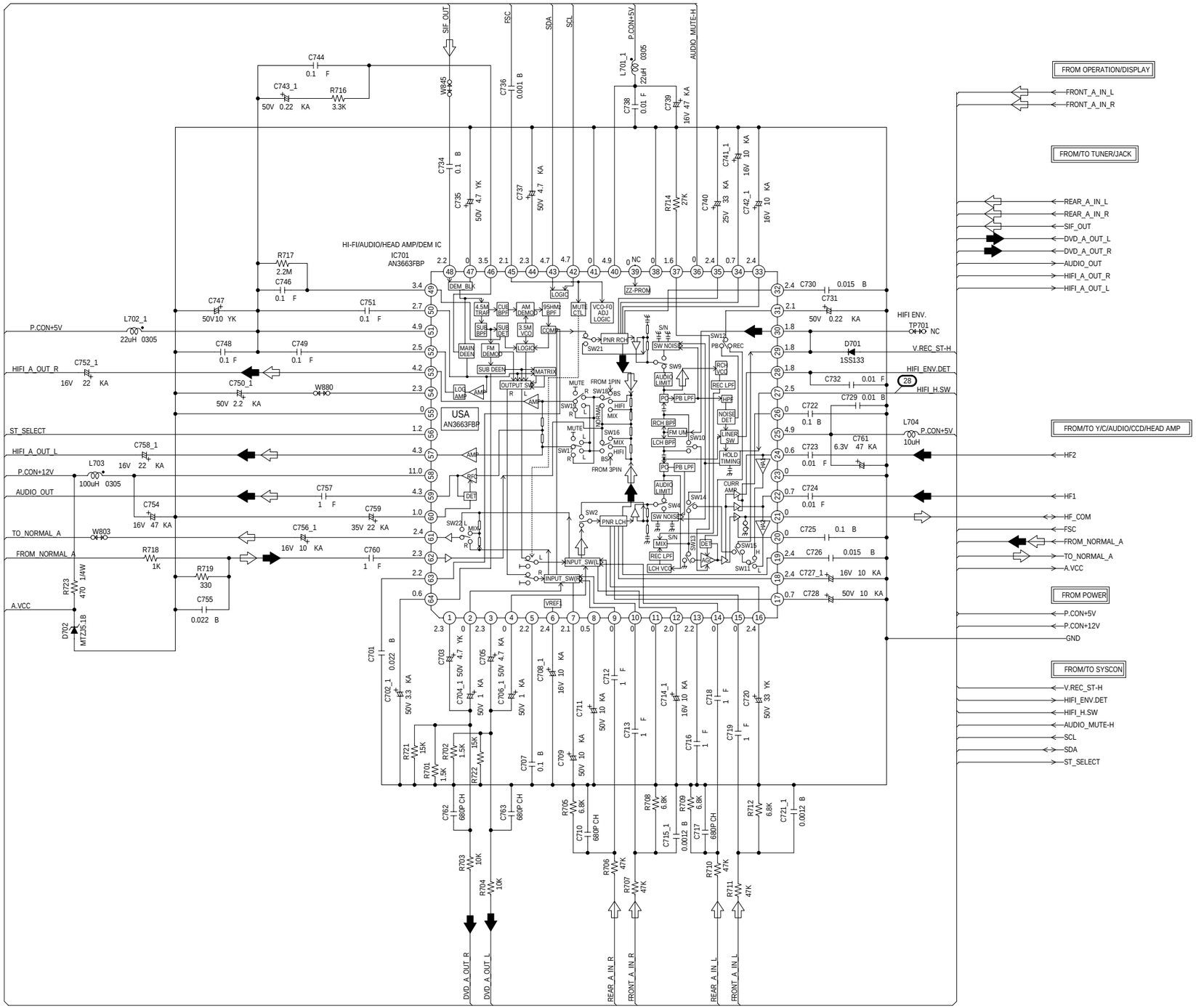
CAUTION: DIGITAL TRANSISTOR

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

Hi-Fi/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)



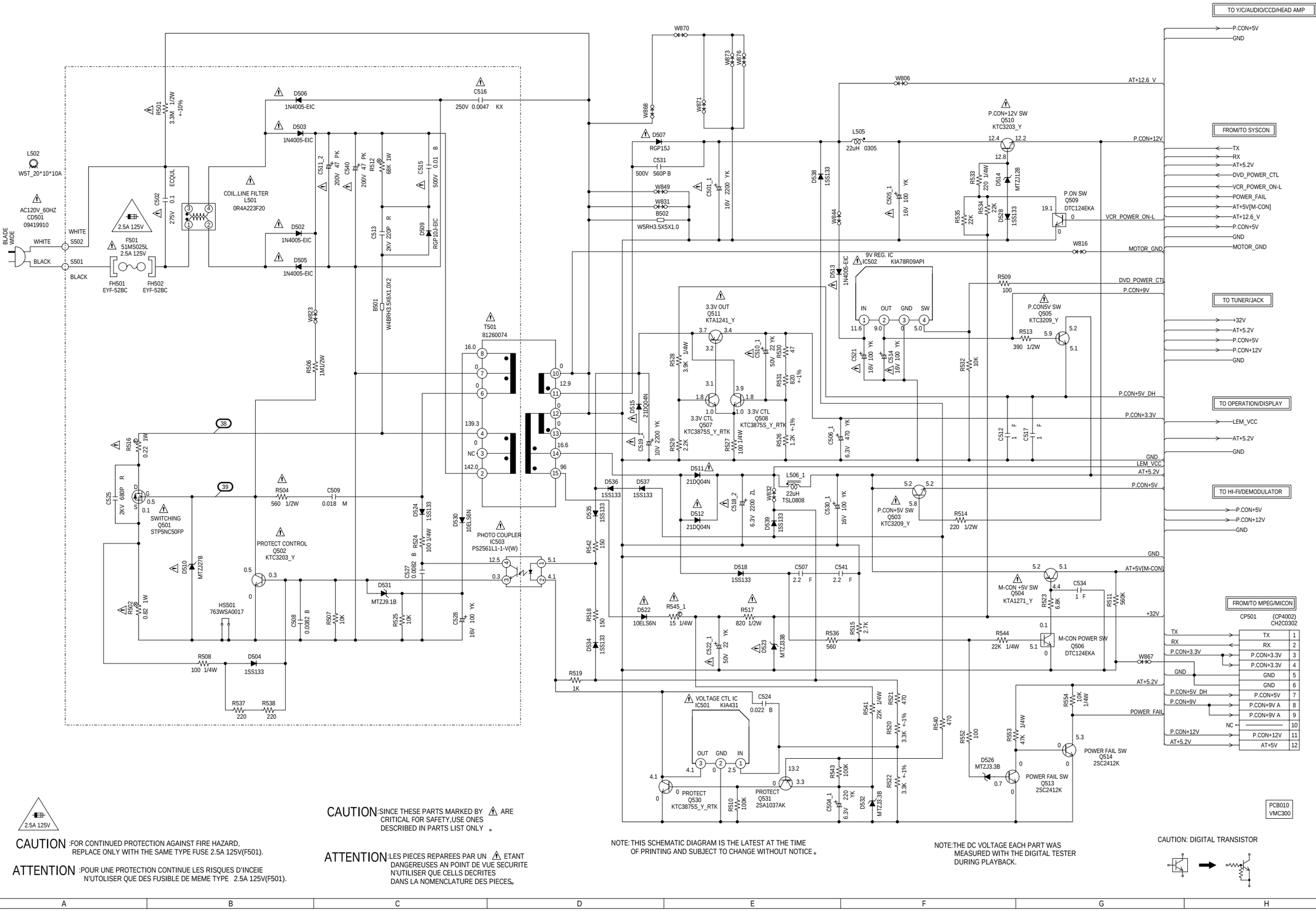
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

AUDIO SIGNAL(REC)

AUDIO SIGNAL(PB)

POWER SCHEMATIC DIAGRAM
(VCR PCB)



2.5A 125V

CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 2.5A 125V(F501).

ATTENTION :POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTOLISER QUE DES FUSIBLE DE MEME TYPE 2.5A 125V(F501).

CAUTION:SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

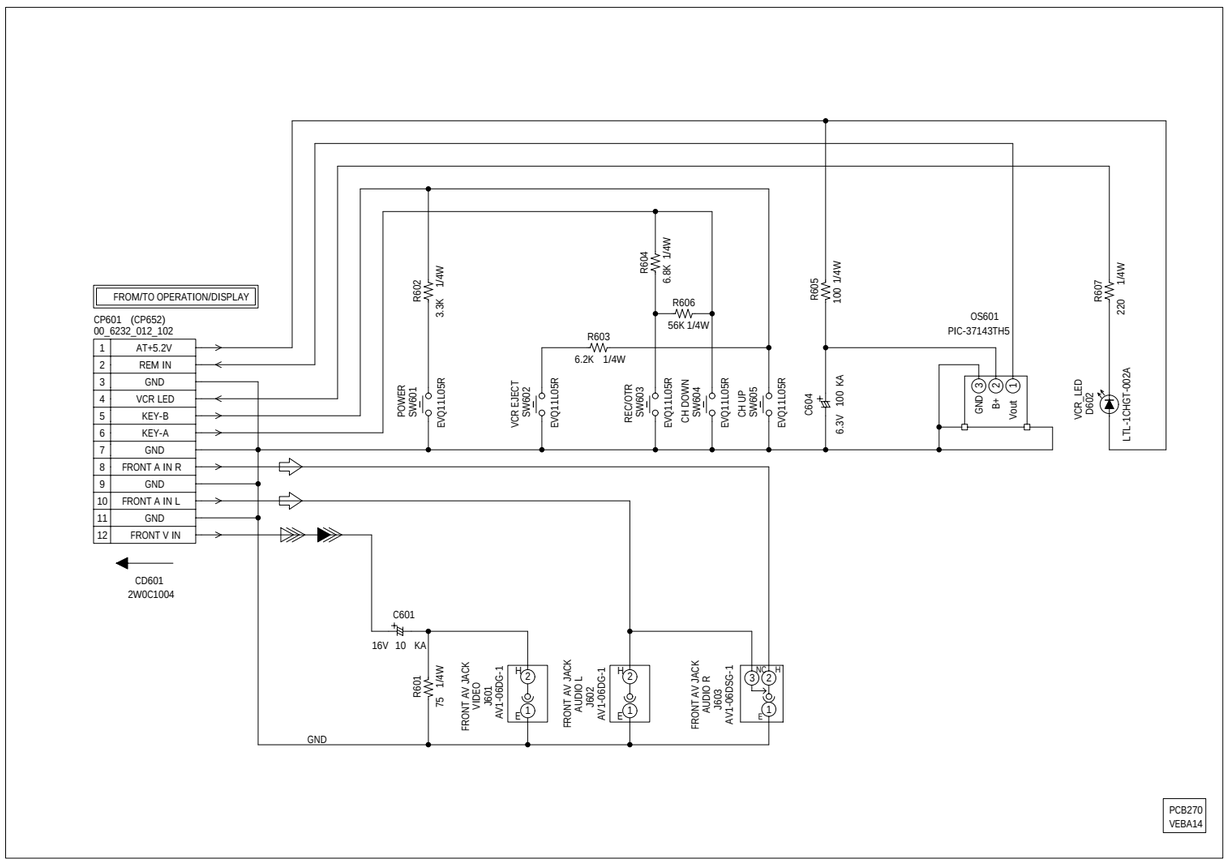
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

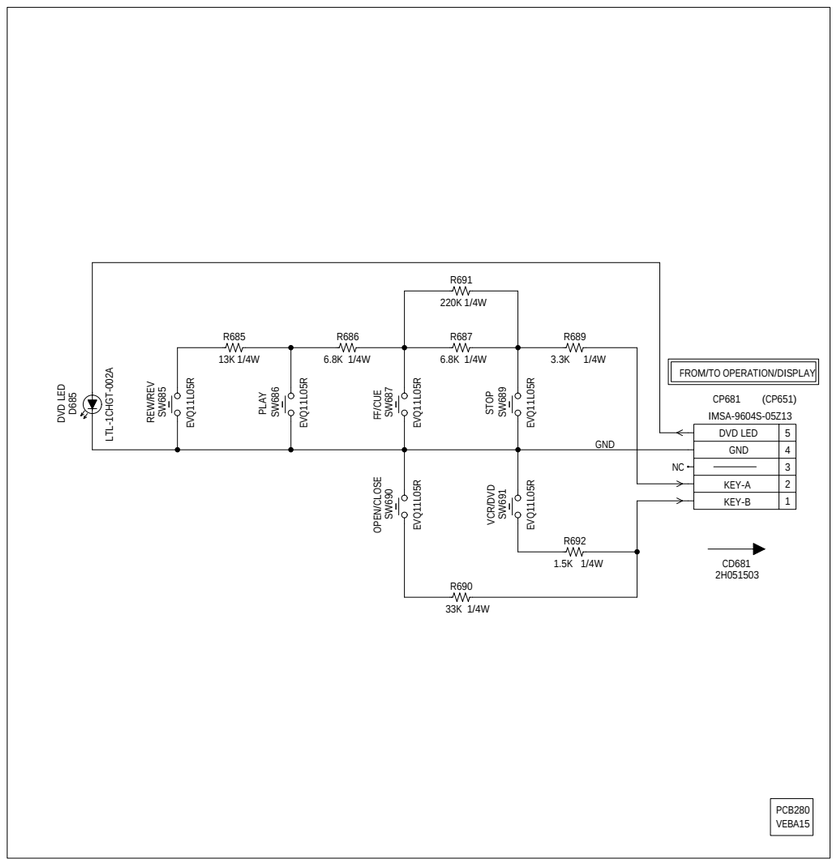
CAUTION: DIGITAL TRANSISTOR

OPERATION SCHEMATIC DIAGRAM

(OPERATION 1 PCB)



(OPERATION 2 PCB)

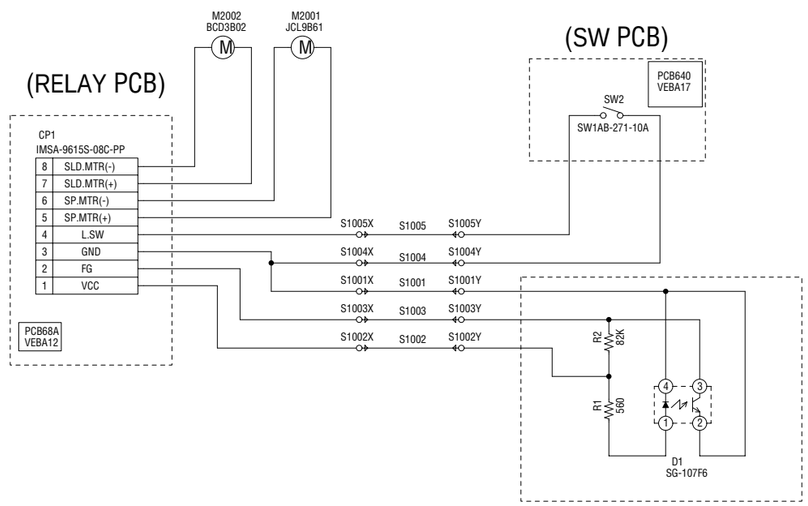


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

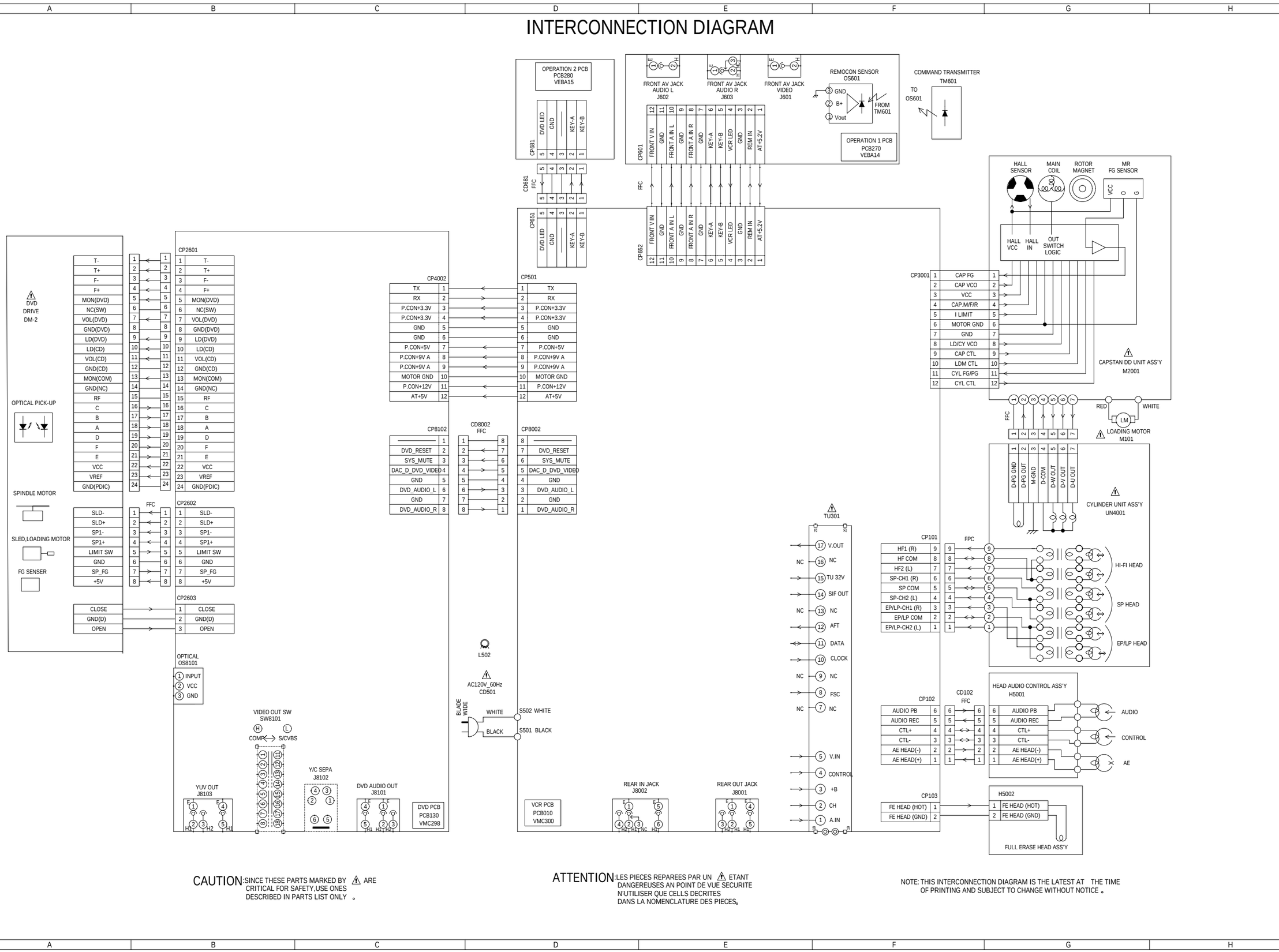
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

AUDIO SIGNAL(REC)
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL

SW/RELAY/FG SCHEMATIC DIAGRAM



INTERCONNECTION DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

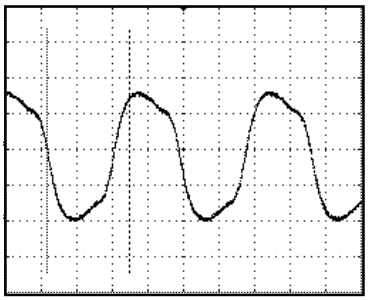
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

WAVEFORMS

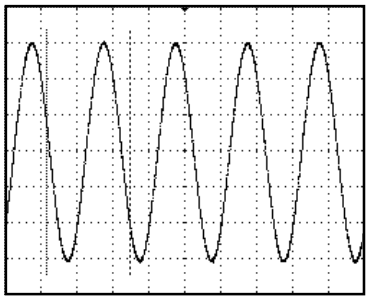
MPEG/MICON

10ns
100mV



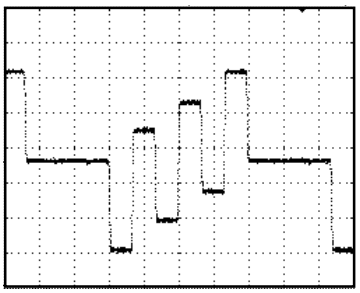
①

500µs
100mV



⑥

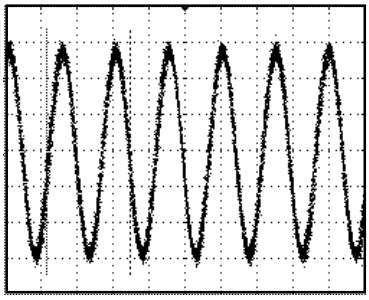
10µs
100mV



⑪

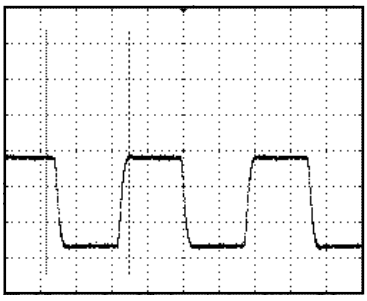
MEMORY

5ns
20mV



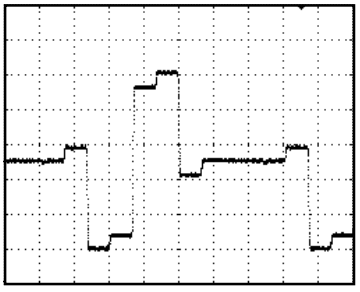
②

200ns
20mV



⑦

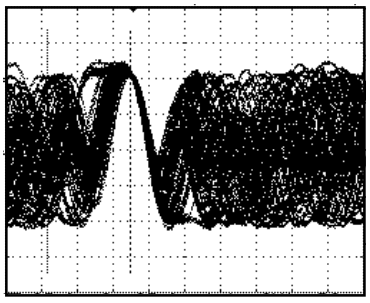
10µs
100mV



⑫

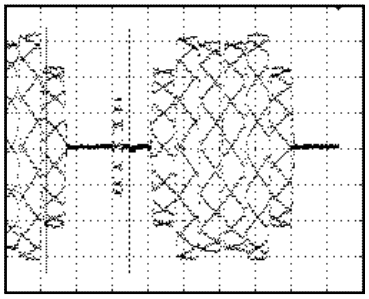
RF AMP/DSP

200ns
20mV



③

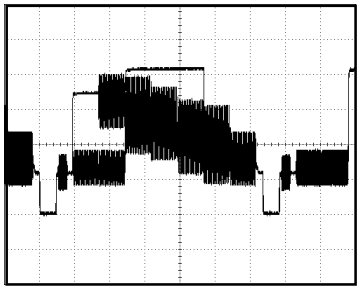
10µs
100mV



⑧

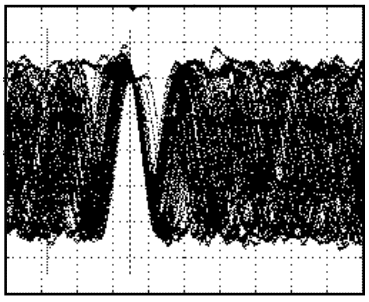
Y/C/AUDIO/CCD/HEAD AMP

PB
10µs
500mV



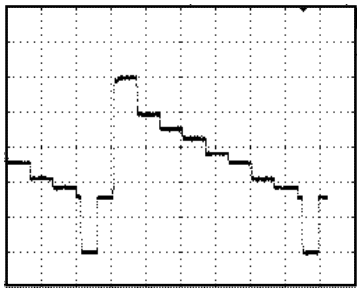
⑯

200ns
10mV



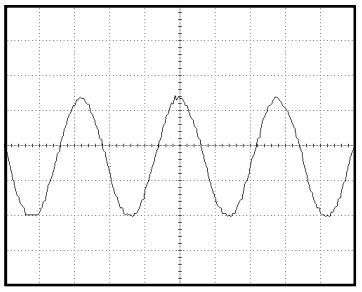
④

10µs
100mV



⑨

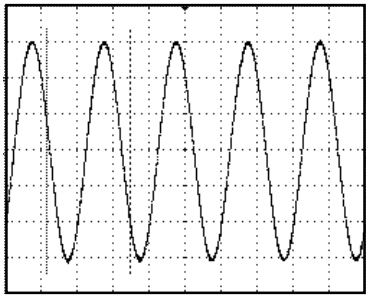
PB
100ns
100mV



⑰

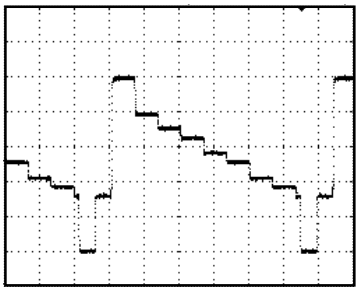
AUDIO/VIDEO

500µs
100mV



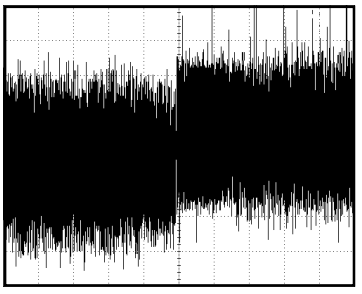
⑤

10µs
100mV



⑩

PB
1ms
100mV



⑱

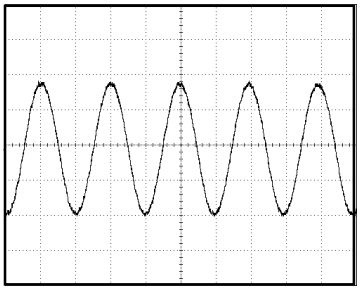
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

POWER

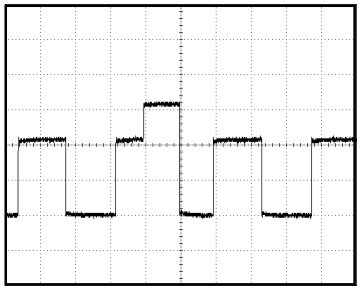
PB
200ms
500mV

⑲



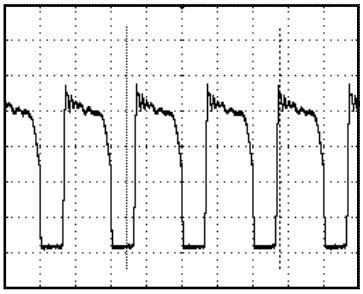
PB
500µs
1.0V

㉔



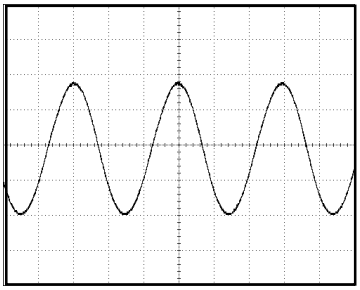
5µs
500mV

㊳



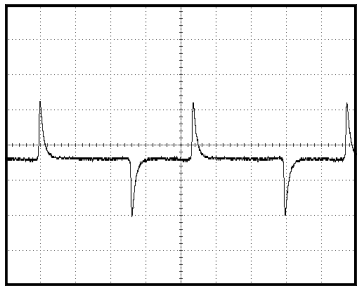
REC
5µs
20V

⑳



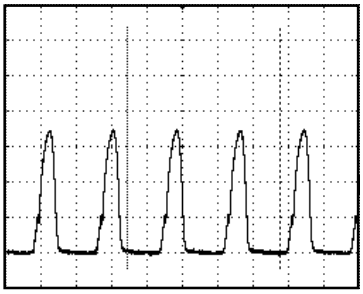
PB
5ms
500mV

㉕



5µs
5.0V

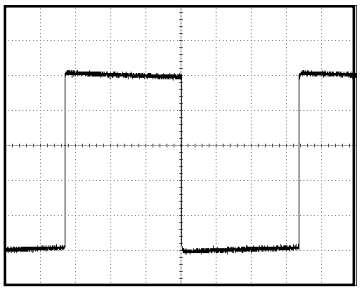
㊴



SYSCON

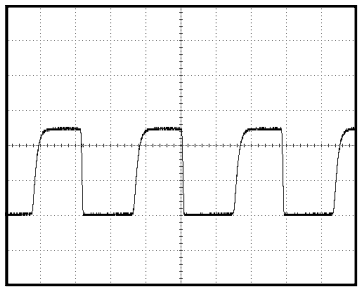
PB
5ms
1.0V

㉑



PB
5ms
2.0V

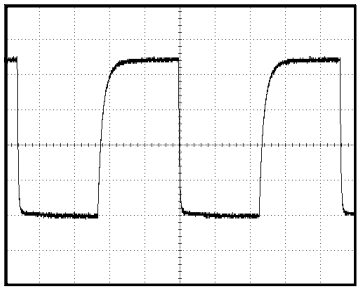
㉗



Hi-Fi/DEMODULATOR

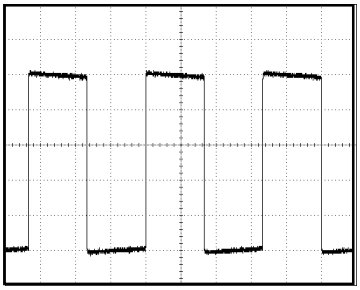
PB
200µs
1.0V

㉒



PB
10ms
1.0V

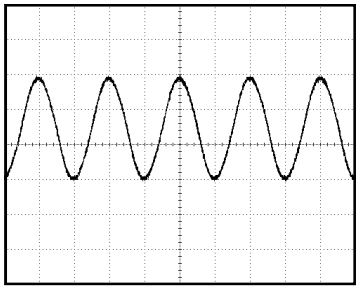
㉘



TUNER/JACK

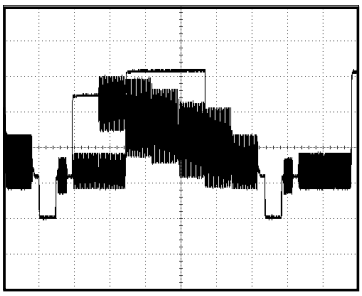
POWER ON
50ns
1.0V

㉓



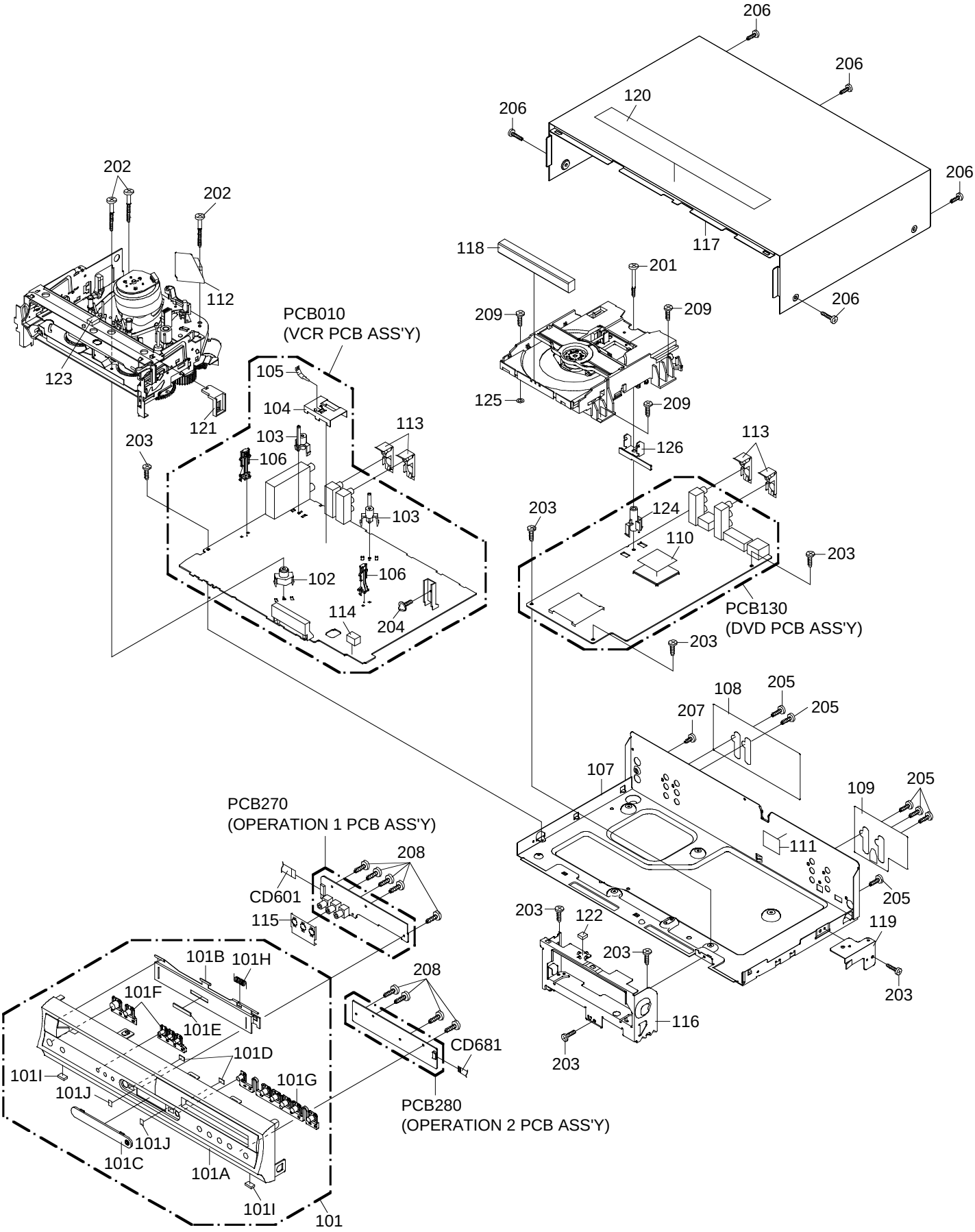
10µs
200mV

㉜

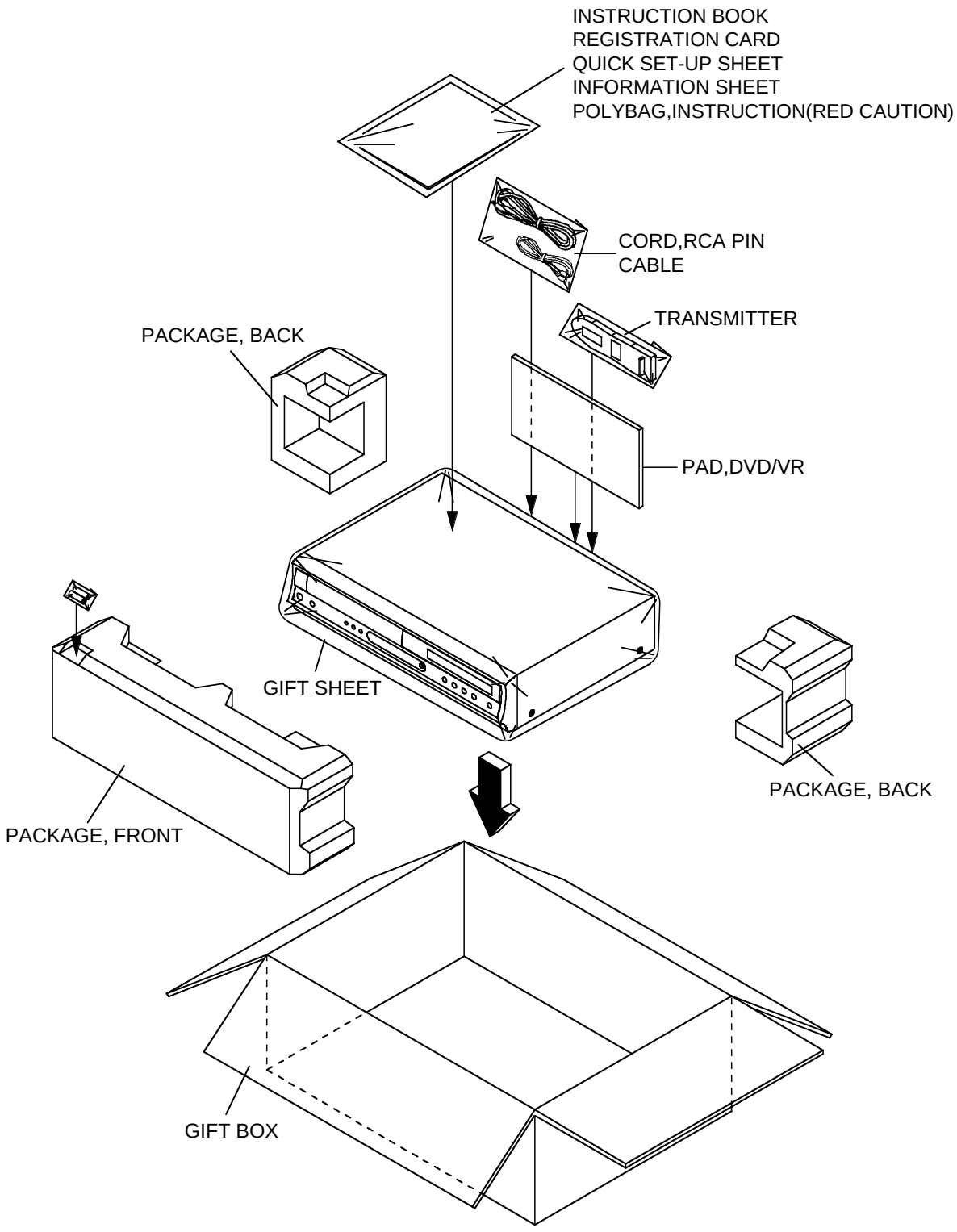


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

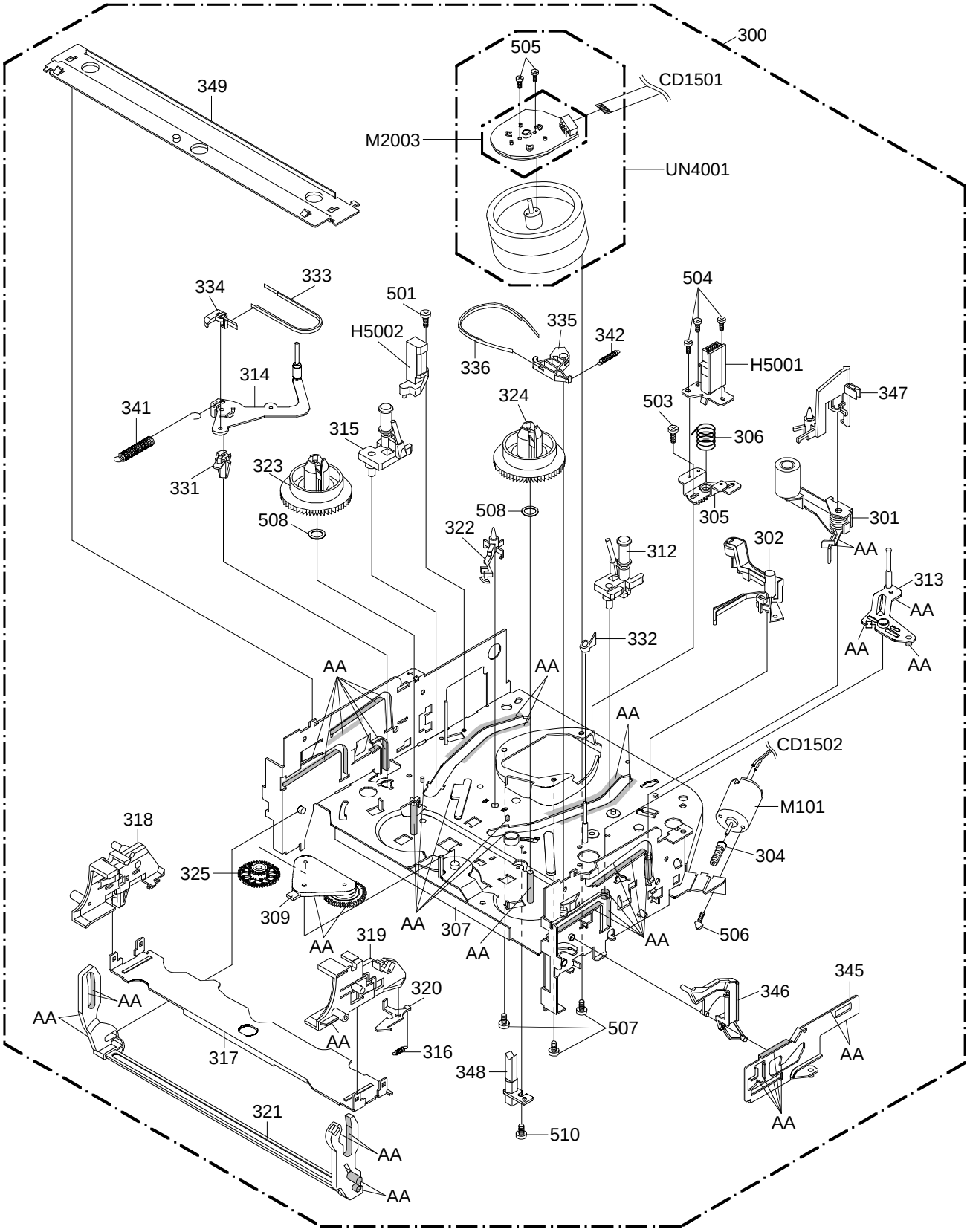
MECHANICAL EXPLODED VIEW



PACKING DIAGRAM



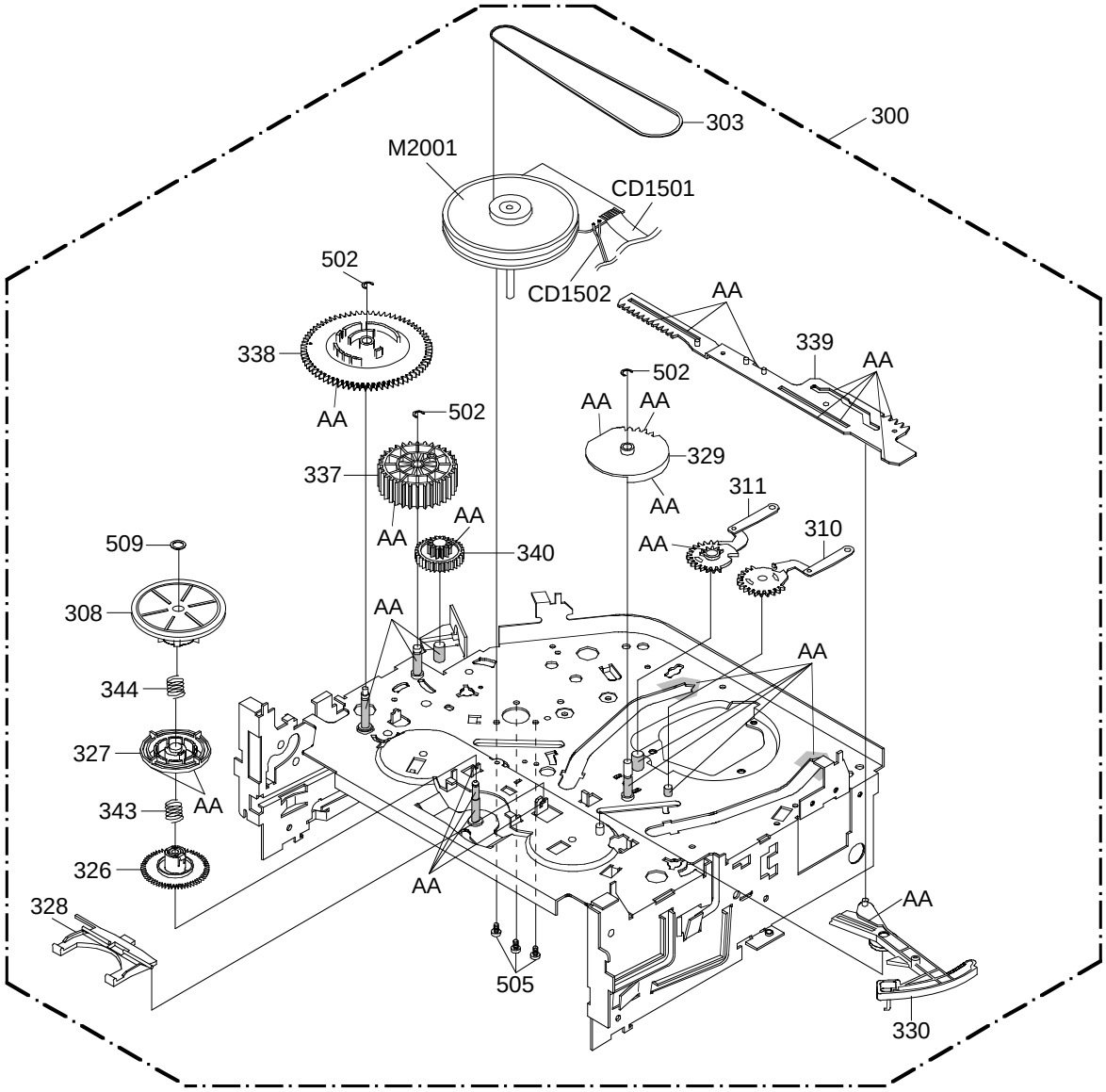
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

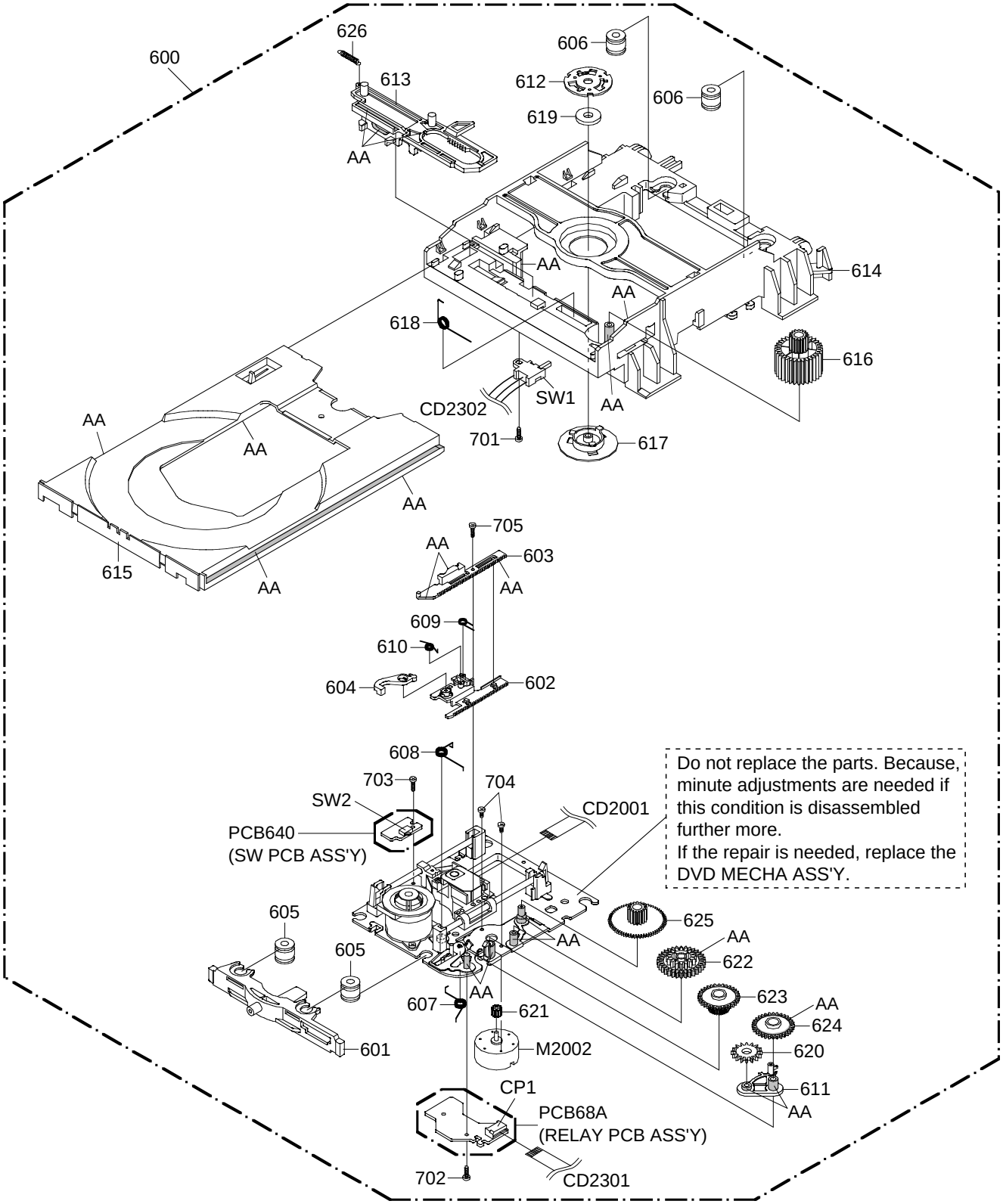
CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE001261	A2C516X720	CABINET,FRONT ASSY	
101A	AE001262	701WPJC290	CABINET,FRONT	
101B	AE001263	712WPBA065	FLAP	
101C	AE001163	712WPDA073	PLATE,DISPLAY	
101D	AE001167	7230007689	SHEET,LED	
101E	79099167	7235490018	BADGE,BRAND	
101F	AE001264	736WPJA003	BUTTON,FRAME-VCR	
101G	AE001265	736WPJA004	BUTTON,FRAME-DVD	
101H	79091463	743WKA0042	SPRING,FLAP	
101I	AD301567	800WFA0051	CUSHION,LEG	
101J	79091472	800WQ00073	DOUBLE FACE TAPE	
102	79099161	701WPA0686	HOLDER,DECK	
103	79099162	701WPA0751	HOLDER,DECK	
104	79099163	752WSA0230	SHIELD,CASE HEAD AMP	
105	79099164	753WUAA006	SPRING,EARTH HEAD AMP	
106	79091294	85OP700038	HOLDER,END SENSOR	
107	AE001160	702WSAA068	PLATE,BOTTOM	
108	AE001266	722549A207	SHEET,RATING	
109	AE001166	7230007673	SHEET,JACK	
110	AE000754	7232020748	SHEET,IC	
111	AD301688	7260000341	SHEET,CAUTION	
112	79099169	752WSA0275	COVER,AC HEAD	
113	BZ710659	752WSA0290	SHIELD,COMPO	
114	AE001177	800WFA0046	CUSHION	
115	79091464	752WUA0002	SHIELD,3-PIN	
116	AE001420	761WSA0127	ANGLE,FRONT	
117	AE001413	702WSB0088	CABINET,TOP	
118	AE001164	712WPJB850	PLATE,TRAY-FRONT	
119	AE001591	761WSA0130	ANGLE,DVD	
120	AE001267	723549A020	POP LABEL	
121	79091467	761WPA0262	HOLDER,DECK TOP	
122	79091475	8965TS1010	CUSHION	65TS10-10H L10
123	79091476	8965TS1017	CUSHION	65TS10-10H L17.5
124	AE001419	761WPA0292	HOLDER,DVD	
125	AE001176	800WB00004	FIBER WASHER	7x3.2xT0.5
126	AE001418	752WSA0359	ANGLE,DVD 2	
201	AE001178	8154730414	SCREW,TAP TITE(B)	M3x41R
202	72001394	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
203	72001395	8109230704	SCREW,TAP TITE(B) R BIND	3x7
204	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
205	72001396	8109230804	SCREW,TAP TITE(B) BIND	3x8
206	72001397	8109K30601	SCREW,TAP TITE(B) BIND(3D)	3x6
207	79091473	8107130404	SCREW,TAP TITE(S) PAN	3x4
208	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
209	79097799	8102230804	SCREW,BIND	M3x8
---	72001483	791WHA0100	GIFT SHEET	
---	AE001173	792WHA0475	PACKAGE,BACK	
---	AE001174	792WHA0489	PACKAGE,FRONT	
---	AE001268	793WCDB794	GIFT BOX	
---	79091031	795WCA0662	PAD,DVD/VR	155x250
---	AE001269	A2C516X975	INSTRUCTION BOOK KIT	
---	AD301582	J2A70617	REGISTRATION CARD	
---	AE001270	J2C51601A	INSTRUCTION BOOK	
---	AE001271	J2C51607A	QUICK SET-UP SHEET	
---	AE001184	J5F10129A	INFORMATION SHEET	
---	AD300812	JB5UD400	POLYBAG,INSTRUCTION(RED CAUTION)	

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
300	79091477	A2C303N420K	DECK ASSY	A2C303N420K	
301	79099178	85OA400234	PINCH ROLLER BLOCK		
302	79099179	85OA500026	AHC ASS'Y		
303	79099180	85OP200290	BELT,CAPSTAN (S)		
304	79099181	85OP600581	WORM		
305	79099182	85OP500083	BASE,AC HEAD		
306	79099183	85OP800324	SPRING,AC HEAD		
307	79099184	85OA000459	MAIN CHASSIS ASS'Y		
308	79099185	85OA200089	CLUTCH ASS'Y		
309	79099186	85OA200090	ARM IDLER ASS'Y		
310	79099187	85OA300065	LOADING ARM S UNIT		
311	79099188	85OA300066	LOADING ARM T UNIT		
312	79099189	85OA400223	INCLINED BASE T UINT 3S		
313	79099190	85OA400232	P5 ARM ASS'Y 2		
314	79099191	85OA400235	TENSION ARM ASS'Y 2		
315	79099192	85OA400231	INCLINED BASE S UNIT		
316	AE000442	85OP800367	SPRING,LOCKER		
317	79099194	85OP900736	CASS,HOLDER		
318	79099195	85OP900748	CASS,SIDE L		
319	79099196	85OP900749	CASS,SIDE R		
320	79099197	85OP900739	LOCKER,R		
321	79099198	85OA900228	LINK UNIT		
322	79099199	85OP000496	POST,CASS GUIDE		
323	79099200	85OP200316	REEL,S (S)		
324	79099201	85OP200317	REEL,T (S)		
325	79099202	85OP200308	GEAR,IDLER		
326	79099203	85OP200311	GEAR,CLUTCH		
327	79099204	85OP200312	GEAR,COUPLING		
328	79099205	85OP200313	LEVER,CLUTCH		
329	79099206	85OP300194	GEAR,MAIN LOADING		
330	79099207	85OP400490	LEVER,TENSION		
331	79099208	85OP400492	HOLDER,TENSION		
332	79099209	85OP400520	CAP.P4		
333	79097714	85OP400542	BAND,TENSION		
334	79099211	85OP400533	CONNECT,TENSION		
335	79099212	85OP600573	ARM,BRAKE T		
336	79097715	85OP600584	BAND,BRAKE T		
337	79099214	85OP600577	CAM,PINCH ROLLER		
338	79099215	85OP600578	CAM,MAIN		
339	79099216	85OP600579	ROD,MAIN		
340	79099217	85OP600582	GEAR,JOINT		
341	79099218	85OP800322	SPRING,TENSION		
342	79099219	85OP800360	SPRING,BRAKE T		
343	79099220	85OP800355	SPRING,COUPLING		
344	79099221	85OP800356	SPRING,RING		
345	79099222	85OP900750	LEVER,LINK 2		
346	79099223	85OP900744	LEVER,FLAP		
347	79099224	85OP900745	CASS,OPENER		
348	BZ710106	85OP700035	REFLECTOR,LED		
349	79099225	85OP900746	BRACKET,TOP 3V		
501	79099226	8107226804	SCREW,TAP TITE(S) BIND	2.6x8	
502	79099235	83ETW30000	E-RING	3.0	
503	79099228	8107226404	SCREW,TAP TITE(S) BIND	2.6x4	
504	79099229	8102120604	SCREW,PAN	M2x6	
505	79099230	8109126604	SCREW,TAP TITE(B) PAN	2.6x6	
506	79099231	810A130404	SCREW/WASHER(A)	M3x4	
507	79099232	810A126504	SCREW/WASHER(A)	M2.6x5	
508	79099233	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13	
509	79099234	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5	
510	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6	
CD1501	BZ614292	122H071704	CORD JUMPER	2H071704	
CD1502	79099237	122Y021902	CORD JUMPER	2Y021902	
H5001	AD301675	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756	
H5002	AD301676	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154	
⚠ M101	79099240	1596P98001	MOTOR (LOADING)	MXN13FB12K3	or
	79097706	1596S98001	MOTOR (LOADING)	MDB2B66	
⚠ M2001	AD301677	1510S98038	CAPSTAN DD UNIT	F2QVB33	
M2003	79099242	1589S11017	MICRO MOTOR	I2OAL05	
⚠ UN4001	AD301954	A2C301N500	CYLINDER UNIT ASS'Y	A2C301N500	

DVD DECK REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
600	AE001272	A2C512K650	DVD MECHA ASSY	A2C512K650	
601	AD301822	92P100022A	TRAVERSE HOLDER		
602	AD301823	92P100032A	RACK,FEED 1		
603	AD301824	92P100033A	RACK,FEED 2		
604	AD301825	92P100035A	LEVER,RACK FEED		
605	AD301826	92P200006A	INSULATOR(F)		
606	AD301827	92P200007A	INSULATOR(R)		
607	AD301850	92P300008A	SPRING,CHASSIS		
608	AD301849	92P300005A	SPRING,ARM IDLER		
609	AD301830	92P300006A	SPRING,RACK FEED 2		
610	AD301831	92P300007A	SPRING,RACK FEED 1		
611	AD301848	92P100031A	ARM,IDLER		
612	AD301833	92P000001A	CLAMPER PLATE		
613	AD301834	92P100019A	RACK,LOADING		
614	AD301835	92P100020A	MAIN FRAME M		
615	AD301836	92P100021A	TRAY		
616	AD301837	92P100023A	GEAR,MAIN		
617	AD301838	92P100024A	CLAMPER		
618	AD301839	92P300002A	SPRING,RACK LOADING		
619	AD301840	92P400002A	MAGNET,CLAMPER		
620	AD301847	92P100030A	GEAR,IDLER		
621	AD301842	92P100025A	GEAR,MOTOR		
622	AD301843	92P100026A	GEAR,MIDDLE 1		
623	AD301844	92P100027A	GEAR,MIDDLE 2		
624	AD301845	92P100028A	GEAR,MIDDLE 3		
625	AD301846	92P100029A	GEAR,FEED		
626	AE001179	92P300009A	SPRING,RACK L		
701	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8	
702	AD301851	8110120604	SCREW,TAP TITE(P) PAN	2x6	
703	AD301852	8107220504	SCREW,TAP TITE(S) BIND	2x5	
704	AD301853	8140117254	SCREW,PAN	M1.7x2.5 P3	
705	AD301913	8110220804	SCREW,TAP TITE(P) BIND	2x8	
CD2001	AD301855	122H0O1901	CORD JUMPER	2H0O1901	
CD2301	AD301856	122H080701	CORD JUMPER	2H080701	
CD2302	AE000148	06CH232101	CORD CONNECTOR	CH232101	or
	AD301857	06CH232003	CORD CONNECTOR	CH232003	
CP1	AD301858	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP	
⚠ M2002	AD301861	1515S98001	FEED MOTOR	BCD3B81	
PCB640	AD301862	A5E601V640	PCB ASS'Y	VEBA17A	
PCB68A	AD301863	A5E601V680	PCB ASS'Y	VEBA12A	
SW1	AD301866	0515S32001	SWITCH	SSS-23-6	
SW2	AE001158	0500101036	PUSH SWITCH	ESE22MH22	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R101	79091339	R904N7561J	RC	560 OHM 1/10W
R102	79091271	R904N7103J	RC	10K OHM 1/10W
R103	79091271	R904N7103J	RC	10K OHM 1/10W
R105	79091270	R904N7102J	RC	1K OHM 1/10W
R106	79091287	R904N7681J	RC	680 OHM 1/10W
R107	79091279	R904N7332J	RC	3.3K OHM 1/10W
R108	79091278	R904N7223J	RC	22K OHM 1/10W
R109	BZ210119	R002T4102J	RC	1K OHM 1/4W
R110	79091553	R904N7822J	RC	8.2K OHM 1/10W
R111	79091553	R904N7822J	RC	8.2K OHM 1/10W
R112	AE001282	R803R9334J	RC	330K OHM 1/16W
R113	79091276	R904N7221J	RC	220 OHM 1/10W
R114	AE000851	R803R9203J	RC	20K OHM 1/16W
R115	79091288	R904N7821J	RC	820 OHM 1/10W
R116	79091331	R904N7153J	RC	15K OHM 1/10W
R117	79091340	R904N7682J	RC	6.8K OHM 1/10W
R119	79091332	R904N7182J	RC	1.8K OHM 1/10W
R120	79091276	R904N7221J	RC	220 OHM 1/10W
R121	79091270	R904N7102J	RC	1K OHM 1/10W
R122	79091272	R904N7104J	RC	100K OHM 1/10W
R123	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R124	79091163	R803R9823J	RC	82K OHM 1/16W
R126	79091332	R904N7182J	RC	1.8K OHM 1/10W
R127	79091521	R803R9684J	RC	680K OHM 1/16W
R129	79091332	R904N7182J	RC	1.8K OHM 1/10W
R131	79091275	R904N7152J	RC	1.5K OHM 1/10W
R132	79091279	R904N7332J	RC	3.3K OHM 1/10W
R133	79091553	R904N7822J	RC	8.2K OHM 1/10W
R136	79091278	R904N7223J	RC	22K OHM 1/10W
R137	79091114	R002T4123J	RC	12K OHM 1/4W
R138	79091278	R904N7223J	RC	22K OHM 1/10W
R139	79091138	R803R9123J	RC	12K OHM 1/16W
R140	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R141	79091270	R904N7102J	RC	1K OHM 1/10W
R142	79091270	R904N7102J	RC	1K OHM 1/10W
R143	79091270	R904N7102J	RC	1K OHM 1/10W
R301	79091337	R904N7333J	RC	33K OHM 1/10W
R302	79091270	R904N7102J	RC	1K OHM 1/10W
R303	79091139	R803R9151J	RC	150 OHM 1/16W
R304	79091271	R904N7103J	RC	10K OHM 1/10W
R305	79091270	R904N7102J	RC	1K OHM 1/10W
⚠R501	79099001	R0G3K2335K	RC	3.3M OHM 1/2W
⚠R502	79091518	R3X181R82J	R,METAL OXIDE	0.82 OHM 1W
R504	79097862	R002T2561J	RC	560 OHM 1/2W
R506	79091107	R002T2105J	RC	1M OHM 1/2W
R507	79091271	R904N7103J	RC	10K OHM 1/10W
R508	AD301203	R002T4101J	RC	100 OHM 1/4W
R509	79091269	R904N7101J	RC	100 OHM 1/10W
R510	79091272	R904N7104J	RC	100K OHM 1/10W
R511	AE001299	R803R9564J	RC	560K OHM 1/16W
⚠R512	79091517	R3X181683J	R,METAL OXIDE	68K OHM 1W
R513	AE000934	R002T2391J	RC	390 OHM 1/2W
R514	79091108	R002T2221J	RC	220 OHM 1/2W
R515	79091544	R904N7272J	RC	2.7K OHM 1/10W
⚠R516	79099005	R63581R22J	R,FUSE	0.22 OHM 1W
⚠R517	79091514	R002T2821J	RC	820 OHM 1/2W
R518	79091274	R904N7151J	RC	150 OHM 1/10W
R519	79091270	R904N7102J	RC	1K OHM 1/10W
R520	79091519	R803R9332F	RC	3.3K OHM 1/16W
R521	79091338	R904N7471J	RC	470 OHM 1/10W
R522	79091519	R803R9332F	RC	3.3K OHM 1/16W
R523	79091340	R904N7682J	RC	6.8K OHM 1/10W
R524	AD301203	R002T4101J	RC	100 OHM 1/4W
R525	79091271	R904N7103J	RC	10K OHM 1/10W
R526	79091256	R803R9122F	RC	1.2K OHM 1/16W
R527	AD301203	R002T4101J	RC	100 OHM 1/4W
R528	79091121	R002T4392J	RC	3.9K OHM 1/4W
R529	79091277	R904N7222J	RC	2.2K OHM 1/10W
R530	AE001283	R803R9470J	RC	47 OHM 1/16W
R531	79091162	R803R9821F	RC	820 OHM 1/16W
R532	79091271	R904N7103J	RC	10K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R533	BZ210135	R002T4221J	RC	220 OHM 1/4W
R534	79091319	R801R7223J	RC	22K OHM 1/10W
R535	79091319	R801R7223J	RC	22K OHM 1/10W
R536	79091339	R904N7561J	RC	560 OHM 1/10W
R537	79091276	R904N7221J	RC	220 OHM 1/10W
R538	79091276	R904N7221J	RC	220 OHM 1/10W
R540	79091338	R904N7471J	RC	470 OHM 1/10W
R541	BZ210192	R002T4223J	RC	22K OHM 1/4W
R542	79091274	R904N7151J	RC	150 OHM 1/10W
R543	79091272	R904N7104J	RC	100K OHM 1/10W
R544	BZ210192	R002T4223J	RC	22K OHM 1/4W
⚠R545	AE001255	R65584150J	R,FUSE	15 OHM 1/4W
R552	79091269	R904N7101J	RC	100 OHM 1/10W
R553	BZ210118	R002T4473J	RC	47K OHM 1/4W
R554	BZ210182	R002T4103J	RC	10K OHM 1/4W
R601	BZ210107	R002T4750J	RC	75 OHM 1/4W
R602	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R603	79091516	R002T4622J	RC	6.2K OHM 1/4W
R604	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R605	AD301203	R002T4101J	RC	100 OHM 1/4W
R606	79091125	R002T4563J	RC	56K OHM 1/4W
R607	BZ210135	R002T4221J	RC	220 OHM 1/4W
R661	79091288	R904N7821J	RC	820 OHM 1/10W
R662	79091543	R904N7181J	RC	180 OHM 1/10W
R663	79091543	R904N7181J	RC	180 OHM 1/10W
R664	79091288	R904N7821J	RC	820 OHM 1/10W
R665	79091543	R904N7181J	RC	180 OHM 1/10W
R666	79091543	R904N7181J	RC	180 OHM 1/10W
R667	79091543	R904N7181J	RC	180 OHM 1/10W
R668	79091543	R904N7181J	RC	180 OHM 1/10W
R669	79091288	R904N7821J	RC	820 OHM 1/10W
R670	79091543	R904N7181J	RC	180 OHM 1/10W
R671	79091288	R904N7821J	RC	820 OHM 1/10W
R672	79091543	R904N7181J	RC	180 OHM 1/10W
R673	79091543	R904N7181J	RC	180 OHM 1/10W
R674	79091543	R904N7181J	RC	180 OHM 1/10W
R675	79091288	R904N7821J	RC	820 OHM 1/10W
R683	AE001293	R904N7271J	RC	270 OHM 1/10W
R685	79091115	R002T4133J	RC	13K OHM 1/4W
R686	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R687	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R689	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R690	72532485	R002T4333J	RC	33K OHM 1/4W
R691	72532482	R002T4224J	RC	220K OHM 1/4W
R692	AD301301	R002T4152J	RC	1.5K OHM 1/4W
R701	79091275	R904N7152J	RC	1.5K OHM 1/10W
R702	79091275	R904N7152J	RC	1.5K OHM 1/10W
R703	79091271	R904N7103J	RC	10K OHM 1/10W
R704	79091271	R904N7103J	RC	10K OHM 1/10W
R705	79091159	R803R9682J	RC	6.8K OHM 1/16W
R706	79091153	R803R9473J	RC	47K OHM 1/16W
R707	79091283	R904N7473J	RC	47K OHM 1/10W
R708	79091340	R904N7682J	RC	6.8K OHM 1/10W
R709	79091159	R803R9682J	RC	6.8K OHM 1/16W
R710	79091153	R803R9473J	RC	47K OHM 1/16W
R711	79091283	R904N7473J	RC	47K OHM 1/10W
R712	79091340	R904N7682J	RC	6.8K OHM 1/10W
R714	79091146	R803R9273J	RC	27K OHM 1/16W
R716	79091279	R904N7332J	RC	3.3K OHM 1/10W
R717	79091260	R803R9225J	RC	2.2M OHM 1/16W
R718	79091270	R904N7102J	RC	1K OHM 1/10W
R719	79091336	R904N7331J	RC	330 OHM 1/10W
R721	79091331	R904N7153J	RC	15K OHM 1/10W
R722	79091331	R904N7153J	RC	15K OHM 1/10W
R723	79091123	R002T4471J	RC	470 OHM 1/4W
R2301	79091133	R803R9102J	RC	1K OHM 1/16W
R2303	79091147	R803R92R2J	RC	2.2 OHM 1/16W
R2304	79091147	R803R92R2J	RC	2.2 OHM 1/16W
R2305	AE000854	R803R9513J	RC	51K OHM 1/16W
R2306	79091286	R904N7562J	RC	5.6K OHM 1/10W
R2307	79091146	R803R9273J	RC	27K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R2308	AE000851	R803R9203J	RC	20K OHM 1/16W
R2309	79091151	R803R9471J	RC	470 OHM 1/16W
R2310	79091156	R803R9562J	RC	5.6K OHM 1/16W
R2312	79091156	R803R9562J	RC	5.6K OHM 1/16W
R2313	79091156	R803R9562J	RC	5.6K OHM 1/16W
R2314	79091156	R803R9562J	RC	5.6K OHM 1/16W
R2316	AE000851	R803R9203J	RC	20K OHM 1/16W
R2318	79091286	R904N7562J	RC	5.6K OHM 1/10W
R2319	79091146	R803R9273J	RC	27K OHM 1/16W
R2321	AE000854	R803R9513J	RC	51K OHM 1/16W
R2322	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2323	79091279	R904N7332J	RC	3.3K OHM 1/10W
R2324	79091133	R803R9102J	RC	1K OHM 1/16W
R2325	79091159	R803R9682J	RC	6.8K OHM 1/16W
R2326	79091405	R803R9822J	RC	8.2K OHM 1/16W
R2327	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2328	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2329	79091133	R803R9102J	RC	1K OHM 1/16W
R2330	79091133	R803R9102J	RC	1K OHM 1/16W
R2331	79091151	R803R9471J	RC	470 OHM 1/16W
R2334	79091134	R803R9103J	RC	10K OHM 1/16W
R2337	79091134	R803R9103J	RC	10K OHM 1/16W
R2601	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2602	AE001288	R8E3P9185J	RC	1.8M OHM 1/16W
R2603	AE001286	R8E3P9133F	RC	13K OHM 1/16W
R2604	AE001289	R8E3P9273F	RC	27K OHM 1/16W
R2605	AE001284	R8E3P9103F	RC	10K OHM 1/16W
R2607	79091329	R904N7122J	RC	1.2K OHM 1/10W
R2608	79091137	R803R9122J	RC	1.2K OHM 1/16W
R2609	79091329	R904N7122J	RC	1.2K OHM 1/10W
R2610	AE001291	R8E3P9512F	RC	5.1K OHM 1/16W
R2611	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2612	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2613	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2614	AE001285	R8E3P9123F	RC	12K OHM 1/16W
R2615	79091268	R904N7100J	RC	10 OHM 1/10W
R2616	79091270	R904N7102J	RC	1K OHM 1/10W
R2617	79091270	R904N7102J	RC	1K OHM 1/10W
R2618	79091268	R904N7100J	RC	10 OHM 1/10W
R2619	79091269	R904N7101J	RC	100 OHM 1/10W
R2620	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2621	79091269	R904N7101J	RC	100 OHM 1/10W
R2622	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2623	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2624	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2625	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2626	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2627	79091275	R904N7152J	RC	1.5K OHM 1/10W
R2628	79091278	R904N7223J	RC	22K OHM 1/10W
R2629	79091275	R904N7152J	RC	1.5K OHM 1/10W
R2630	79091278	R904N7223J	RC	22K OHM 1/10W
R2631	79091273	R904N7105J	RC	1M OHM 1/10W
R2632	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2635	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2643	79091270	R904N7102J	RC	1K OHM 1/10W
R2644	79091144	R803R9222J	RC	2.2K OHM 1/16W
R2645	79091270	R904N7102J	RC	1K OHM 1/10W
R2646	79091277	R904N7222J	RC	2.2K OHM 1/10W
R2647	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R2648	AE001287	R8E3P9133J	RC	13K OHM 1/16W
R2649	79091131	R803R9101J	RC	100 OHM 1/16W
R2650	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2651	79091152	R803R9472J	RC	4.7K OHM 1/16W
R2652	79091131	R803R9101J	RC	100 OHM 1/16W
R2653	79091131	R803R9101J	RC	100 OHM 1/16W
R3001	79091286	R904N7562J	RC	5.6K OHM 1/10W
R3002	79091113	R002T4121J	RC	120 OHM 1/4W
R3003	79091279	R904N7332J	RC	3.3K OHM 1/10W
R3004	79091545	R904N7274J	RC	270K OHM 1/10W
R3006	79091283	R904N7473J	RC	47K OHM 1/10W
R3007	79091340	R904N7682J	RC	6.8K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R3008	79091270	R904N7102J	RC	1K OHM 1/10W
R3009	79091282	R904N7472J	RC	4.7K OHM 1/10W
R3010	79091271	R904N7103J	RC	10K OHM 1/10W
R3011	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3012	79091551	R904N7563J	RC	56K OHM 1/10W
R3014	79091551	R904N7563J	RC	56K OHM 1/10W
R3015	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3016	AD301004	R801R7271J	RC	270 OHM 1/10W
R3017	79091339	R904N7561J	RC	560 OHM 1/10W
R3019	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3020	79091339	R904N7561J	RC	560 OHM 1/10W
R3022	79091541	R904N7154J	RC	150K OHM 1/10W
R3025	79091338	R904N7471J	RC	470 OHM 1/10W
R3026	79091545	R904N7274J	RC	270K OHM 1/10W
R3027	79091331	R904N7153J	RC	15K OHM 1/10W
R3028	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3029	79091282	R904N7472J	RC	4.7K OHM 1/10W
R3030	79091286	R904N7562J	RC	5.6K OHM 1/10W
R3031	79091273	R904N7105J	RC	1M OHM 1/10W
R3032	79091271	R904N7103J	RC	10K OHM 1/10W
R3033	79091271	R904N7103J	RC	10K OHM 1/10W
R3034	79091273	R904N7105J	RC	1M OHM 1/10W
R3035	AD301728	R801R7103J	RC	10K OHM 1/10W
R3037	79091283	R904N7473J	RC	47K OHM 1/10W
R3038	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3043	79091284	R904N7474J	RC	470K OHM 1/10W
R3044	79091279	R904N7332J	RC	3.3K OHM 1/10W
R3045	79091279	R904N7332J	RC	3.3K OHM 1/10W
R3046	79091271	R904N7103J	RC	10K OHM 1/10W
R3047	79091271	R904N7103J	RC	10K OHM 1/10W
R3049	79091283	R904N7473J	RC	47K OHM 1/10W
R3050	AD301203	R002T4101J	RC	100 OHM 1/4W
R3051	AE001292	R904N7183J	RC	18K OHM 1/10W
R3053	79091284	R904N7474J	RC	470K OHM 1/10W
R3055	79091278	R904N7223J	RC	22K OHM 1/10W
R3056	79091270	R904N7102J	RC	1K OHM 1/10W
R3057	79091278	R904N7223J	RC	22K OHM 1/10W
R3062	79091270	R904N7102J	RC	1K OHM 1/10W
R3063	79091270	R904N7102J	RC	1K OHM 1/10W
R3083	79091337	R904N7333J	RC	33K OHM 1/10W
R3087	79091337	R904N7333J	RC	33K OHM 1/10W
R4001	AE001290	R8E3P9391F	RC	390 OHM 1/16W
R4002	79091538	R8E3P9750F	RC	75 OHM 1/16W
R4003	79091538	R8E3P9750F	RC	75 OHM 1/16W
R4004	79091539	R8E3P9820F	RC	82 OHM 1/16W
R4005	79091538	R8E3P9750F	RC	75 OHM 1/16W
R4008	79091269	R904N7101J	RC	100 OHM 1/10W
R4012	79091273	R904N7105J	RC	1M OHM 1/10W
R4014	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4016	79091131	R803R9101J	RC	100 OHM 1/16W
R4018	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4019	79091335	R904N7330J	RC	33 OHM 1/10W
R4020	79091148	R803R9330J	RC	33 OHM 1/16W
R4021	79091148	R803R9330J	RC	33 OHM 1/16W
R4022	79091271	R904N7103J	RC	10K OHM 1/10W
R4023	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4024	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4025	79091276	R904N7221J	RC	220 OHM 1/10W
R4026	79091269	R904N7101J	RC	100 OHM 1/10W
R4027	79091131	R803R9101J	RC	100 OHM 1/16W
R4031	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4032	79091535	R8E3P9511F	RC	510 OHM 1/16W
R4033	79091268	R904N7100J	RC	10 OHM 1/10W
R4034	79091132	R803R9102F	RC	1K OHM 1/16W
R4035	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4036	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4037	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4038	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4039	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4040	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4041	79091534	R8E3P9472J	RC	4.7K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R4042	AE001294	R904N7680J	RC	68 OHM 1/10W
R4043	79091271	R904N7103J	RC	10K OHM 1/10W
R4044	79091134	R803R9103J	RC	10K OHM 1/16W
R4045	79091152	R803R9472J	RC	4.7K OHM 1/16W
R4046	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4047	79091335	R904N7330J	RC	33 OHM 1/10W
R4048	79091283	R904N7473J	RC	47K OHM 1/10W
R4049	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4050	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4051	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4052	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R4053	79091133	R803R9102J	RC	1K OHM 1/16W
R4054	79091133	R803R9102J	RC	1K OHM 1/16W
R7306	79091271	R904N7103J	RC	10K OHM 1/10W
R7307	79091271	R904N7103J	RC	10K OHM 1/10W
R8001	79091579	R803R9750J	RC	75 OHM 1/16W
R8009	79091110	R002T2471J	RC	470 OHM 1/2W
R8010	79091552	R904N7750J	RC	75 OHM 1/10W
R8011	79091269	R904N7101J	RC	100 OHM 1/10W
R8014	79091547	R904N7391J	RC	390 OHM 1/10W
R8015	79091547	R904N7391J	RC	390 OHM 1/10W
R8016	79091277	R904N7222J	RC	2.2K OHM 1/10W
R8017	79091277	R904N7222J	RC	2.2K OHM 1/10W
R8032	79091338	R904N7471J	RC	470 OHM 1/10W
R8056	79091338	R904N7471J	RC	470 OHM 1/10W
R8059	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R8101	79091271	R904N7103J	RC	10K OHM 1/10W
R8102	79091272	R904N7104J	RC	100K OHM 1/10W
R8103	79091135	R803R9104J	RC	100K OHM 1/16W
R8104	79091271	R904N7103J	RC	10K OHM 1/10W
R8105	79091153	R803R9473J	RC	47K OHM 1/16W
R8106	79091283	R904N7473J	RC	47K OHM 1/10W
R8107	79091134	R803R9103J	RC	10K OHM 1/16W
R8108	79091134	R803R9103J	RC	10K OHM 1/16W
R8109	79091330	R904N7123J	RC	12K OHM 1/10W
R8110	79091330	R904N7123J	RC	12K OHM 1/10W
R8111	79091271	R904N7103J	RC	10K OHM 1/10W
R8112	79091151	R803R9471J	RC	470 OHM 1/16W
R8113	79091402	R803R9560J	RC	56 OHM 1/16W
R8114	79091133	R803R9102J	RC	1K OHM 1/16W
R8115	79091151	R803R9471J	RC	470 OHM 1/16W
R8116	79091134	R803R9103J	RC	10K OHM 1/16W
R8117	79091134	R803R9103J	RC	10K OHM 1/16W
R8118	79091270	R904N7102J	RC	1K OHM 1/10W
R8119	79091284	R904N7474J	RC	470K OHM 1/10W
R8120	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R8121	79091279	R904N7332J	RC	3.3K OHM 1/10W
R8122	79091133	R803R9102J	RC	1K OHM 1/16W
R8123	79091534	R8E3P9472J	RC	4.7K OHM 1/16W
R8124	79091133	R803R9102J	RC	1K OHM 1/16W
R8128	79091270	R904N7102J	RC	1K OHM 1/10W
R8129	79091271	R904N7103J	RC	10K OHM 1/10W
R8130	79091277	R904N7222J	RC	2.2K OHM 1/10W
R8131	79091275	R904N7152J	RC	1.5K OHM 1/10W
R8132	79091279	R904N7332J	RC	3.3K OHM 1/10W
R8133	AE000496	R801R7221J	RC	220 OHM 1/10W
R8134	79091151	R803R9471J	RC	470 OHM 1/16W
R8135	79091151	R803R9471J	RC	470 OHM 1/16W
R8136	79091520	R803R9680J	RC	68 OHM 1/16W
R8137	79091135	R803R9104J	RC	100K OHM 1/16W
R8151	79091134	R803R9103J	RC	10K OHM 1/16W
		CAPACITORS		
C101	79091311	P232W1223J	CMP	0.022 UF 100V MMTS
C103	72001221	E50HU0220M	CE	22 UF 6.3V
C104	72531761	E50HU0221M	CE	220 UF 6.3V
C105	72001221	E50HU0220M	CE	22 UF 6.3V
C106	79091235	CS0YB0414K	CC	0.01 UF 50V B
C107	79091236	CS0YB04E4K	CC	0.015 UF 50V B
C108	79091235	CS0YB0414K	CC	0.01 UF 50V B
C109	79091233	CS0YB0215K	CC	0.1 UF 16V B
C110	72531753	E02LU2470M	CE	47 UF 16V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description	
		CAPACITORS			
C112	72531761	E50HU0221M	CE	220 UF 6.3V	
C114	79091233	CS0YB0215K	CC	0.1 UF 16V B	
C115	72001224	E50HU1330M	CE	33 UF 10 V	
C116	79091246	CS0YF0315Z	CC	0.1 UF 25V F	
C117	79091235	CS0YB0414K	CC	0.01 UF 50V B	
C118	79091235	CS0YB0414K	CC	0.01 UF 50V B	
C119	72531763	E50HU2100M	CE	10 UF 16V	
C120	72531765	E50HU5010M	CE	1 UF 50V	
C121	AE001273	CS0PB04K3K	CC	0.0027UF 50V B	
C122	79091490	CS0YB04B3K	CC	0.0012UF 50V B	
C123	79099014	E02LU54R7M	CE	4.7 UF 50V	
C124	72531765	E50HU5010M	CE	1 UF 50V	
C125	AE001274	CS0PCH4N2J	CC	390 PF 50V CH	
C126	79091233	CS0YB0215K	CC	0.1 UF 16V B	
C127	79091486	CS0PCH4G2J	CC	180 PF 50V CH	
C129	72001165	CS0RB0216K	CC	1 UF 16V B	
C131	72001220	E50HU0101M	CE	100 UF 6.3V	
C132	72531765	E50HU5010M	CE	1 UF 50V	
C133	79091503	CS0YF0N16Z	CC	1 UF 10V F	
C134	72531765	E50HU5010M	CE	1 UF 50V	
C135	79091096	E02LU5R22M	CE	0.22 UF 50V	
C136	72531755	E02LU4220M	CE	22 UF 35V	
C137	72531765	E50HU5010M	CE	1 UF 50V	
C138	72531756	E02LU5010M	CE	1 UF 50V	
C139	79091246	CS0YF0315Z	CC	0.1 UF 25V F	
C140	79091247	E00NU54R7M	CE	4.7 UF 50 V	
C141	79091235	CS0YB0414K	CC	0.01 UF 50V B	
C142	72531764	E50HU2470M	CE	47 UF 16V	
C143	79091503	CS0YF0N16Z	CC	1 UF 10V F	
C144	79091235	CS0YB0414K	CC	0.01 UF 50V B	
C145	79091238	CS0YB04H4K	CC	0.022 UF 50V B	
C146	72531765	E50HU5010M	CE	1 UF 50V	
C147	79091238	CS0YB04H4K	CC	0.022 UF 50V B	
C148	72531765	E50HU5010M	CE	1 UF 50V	
C151	72531765	E50HU5010M	CE	1 UF 50V	
C152	72531753	E02LU2470M	CE	47 UF 16V	
C154	79091233	CS0YB0215K	CC	0.1 UF 16V B	
C155	72001165	CS0RB0216K	CC	1 UF 16V B	
C156	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F	
C158	79091233	CS0YB0215K	CC	0.1 UF 16V B	
C159	79091303	CS0YCH4H1J	CC	22 PF 50V CH	
C162	79091233	CS0YB0215K	CC	0.1 UF 16V B	
C163	72001223	E50HU0470M	CE	47 UF 6.3V	
C165	AE001278	CS0YF04Q4Z	CC	0.047 UF 50V F	
C166	79091083	CS0RB04U4K	CC	0.068 UF 50V B	
C169	AE001278	CS0YF04Q4Z	CC	0.047 UF 50V F	
C172	79091303	CS0YCH4H1J	CC	22 PF 50V CH	
C174	72001223	E50HU0470M	CE	47 UF 6.3V	
C301	79091502	CS0YF0414Z	CC	0.01 UF 50V F	
C303	AE001275	CS0PF0415Z	CC	0.1 UF 50V F	
C304	79091054	CS0PB0414K	CC	0.01 UF 50V B	
C309	72001214	E02LU0221M	CE	220 UF 6.3V	
C313	72531763	E50HU2100M	CE	10 UF 16V	
C315	72531763	E50HU2100M	CE	10 UF 16V	
C318	72531763	E50HU2100M	CE	10 UF 16V	
⚠C501	BZ110119	E02LF2222M	CE	2200 UF 16V	
⚠C502	BZ110035	P2122B104M	CMP	0.1 UF 275V ECQUL	
C504	72001214	E02LU0221M	CE	220 UF 6.3V	
⚠C505	72001216	E02LU2101M	CE	100 UF 16V	
C506	72531751	E02LU0471M	CE	470 UF 6.3V	
C507	79091089	CS0RF02H6Z	CC	2.2 UF 16V F	
C508	79091493	CS0YB04W3K	CC	0.0082UF 50V B	
C509	AE001281	P1F4T0183J	CP	0.018 UF 50V	or
	79091106	P1S3T0183J	CP	0.018 UF 50V	
C510	BZ110205	E02LU5220M	CE	22 UF 50V	
⚠C511	BZ110186	E62QFC470M	CE	47 UF 200V	
C512	79091503	CS0YF0N16Z	CC	1 UF 10V F	
C513	79091485	C0PLRR7H2K	CC	220 PF 2KV R	
⚠C514	72001216	E02LU2101M	CE	100 UF 16V	
⚠C515	79091483	C0J0B0514K	CC	0.01 UF 500V B	
⚠C516	AD301391	CD39E0MQ3M	CC	0.0047UF 250V	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C517	79091503	CS0YF0N16Z	CC	1 UF 10V F
⚠C518	72001230	E62F00222M	CE	2200 UF 6.3V
⚠C519	AE001253	E02L01222M	CE	2200 UF 10V
⚠C521	72001216	E02LU2101M	CE	100 UF 16V
⚠C522	BZ110205	E02LU5220M	CE	22 UF 50V
C524	79091238	CS0YB04H4K	CC	0.022 UF 50V B
C525	AD301320	C0PLRR7U2K	CC	680 PF 2KV R
C527	79091493	CS0YB04W3K	CC	0.0082UF 50V B
C528	72001216	E02LU2101M	CE	100 UF 16V
C530	72001216	E02LU2101M	CE	100 UF 16V
C531	79091484	C0JTB05S2K	CC	560 PF 500V B
C534	79091503	CS0YF0N16Z	CC	1 UF 10V F
⚠C540	BZ110186	E62QFC470M	CE	47 UF 200V
C541	79091089	CS0RF02H6Z	CC	2.2 UF 16V F
C601	72531763	E50HU2100M	CE	10 UF 16V
C604	72001220	E50HU0101M	CE	100 UF 6.3V
C701	79091238	CS0YB04H4K	CC	0.022 UF 50V B
C702	79091509	E50HU53R3M	CE	3.3 UF 50V
C703	79099014	E02LU54R7M	CE	4.7 UF 50V
C704	72531765	E50HU5010M	CE	1 UF 50V
C705	72001227	E50HU54R7M	CE	4.7 UF 50V
C706	72531765	E50HU5010M	CE	1 UF 50V
C707	79091233	CS0YB0215K	CC	0.1 UF 16V B
C708	72531763	E50HU2100M	CE	10 UF 16V
C709	79097756	E50HU5100M	CE	10 UF 50V
C710	79091487	CS0PCH4U2J	CC	680 PF 50V CH
C711	79097756	E50HU5100M	CE	10 UF 50V
C712	72001163	CS0PF0N16Z	CC	1 UF 10V F
C713	79091503	CS0YF0N16Z	CC	1 UF 10V F
C714	72531763	E50HU2100M	CE	10 UF 16V
C715	79091490	CS0YB04B3K	CC	0.0012UF 50V B
C716	79091503	CS0YF0N16Z	CC	1 UF 10V F
C717	79091487	CS0PCH4U2J	CC	680 PF 50V CH
C718	72001163	CS0PF0N16Z	CC	1 UF 10V F
C719	79091503	CS0YF0N16Z	CC	1 UF 10V F
C720	79091508	E02LU5330M	CE	33 UF 50V
C721	79091490	CS0YB04B3K	CC	0.0012UF 50V B
C722	79091233	CS0YB0215K	CC	0.1 UF 16V B
C723	79091502	CS0YF0414Z	CC	0.01 UF 50V F
C724	79091502	CS0YF0414Z	CC	0.01 UF 50V F
C725	79091233	CS0YB0215K	CC	0.1 UF 16V B
C726	79091236	CS0YB04E4K	CC	0.015 UF 50V B
C727	72531763	E50HU2100M	CE	10 UF 16V
C728	79097756	E50HU5100M	CE	10 UF 50V
C729	79091235	CS0YB0414K	CC	0.01 UF 50V B
C730	79091236	CS0YB04E4K	CC	0.015 UF 50V B
C731	79091510	E50HU5R22M	CE	0.22 UF 50 V
C732	79091502	CS0YF0414Z	CC	0.01 UF 50V F
C734	79091233	CS0YB0215K	CC	0.1 UF 16V B
C735	79099014	E02LU54R7M	CE	4.7 UF 50V
C736	79091234	CS0YB0413K	CC	0.001 UF 50V B
C737	72001227	E50HU54R7M	CE	4.7 UF 50V
C738	79091502	CS0YF0414Z	CC	0.01 UF 50V F
C739	72531764	E50HU2470M	CE	47 UF 16V
C740	AE001279	E50HU3330M	CE	33 UF 25 V
C741	72531763	E50HU2100M	CE	10 UF 16V
C742	72531763	E50HU2100M	CE	10 UF 16V
C743	79091510	E50HU5R22M	CE	0.22 UF 50 V
C744	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C746	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C747	72531757	E02LU5100M	CE	10 UF 50V
C748	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C749	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C750	72531767	E50HU52R2M	CE	2.2 UF 50V
C751	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C752	72001225	E50HU2220M	CE	22 UF 16 V
C754	72531764	E50HU2470M	CE	47 UF 16V
C755	79091238	CS0YB04H4K	CC	0.022 UF 50V B
C756	72531763	E50HU2100M	CE	10 UF 16V
C757	79091503	CS0YF0N16Z	CC	1 UF 10V F
C758	72001225	E50HU2220M	CE	22 UF 16 V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C759	AE001280	E50HU4220M	CE	22 UF 35 V
C760	79091503	CS0YF0N16Z	CC	1 UF 10V F
C761	72001223	E50HU0470M	CE	47 UF 6.3V
C762	79091500	CS0YCH4U2J	CC	680 PF 50V CH
C763	79091500	CS0YCH4U2J	CC	680 PF 50V CH
C2301	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2302	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2303	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2304	79091063	CS0PCH4H2J	CC	220 PF 50V CH
C2305	79091063	CS0PCH4H2J	CC	220 PF 50V CH
C2306	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2307	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2308	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2309	79091053	CS0PB0413K	CC	0.001 UF 50V B
C2310	72531753	E02LU2470M	CE	47 UF 16V
C2311	79091052	CS0PB0215K	CC	0.1 UF 16V B
C2312	79091053	CS0PB0413K	CC	0.001 UF 50V B
C2603	79091237	CS0YB04H3K	CC	0.0022UF 50V B
C2604	79091055	CS0PB04H3K	CC	0.0022UF 50V B
C2605	79091237	CS0YB04H3K	CC	0.0022UF 50V B
C2606	79091237	CS0YB04H3K	CC	0.0022UF 50V B
C2607	79091244	CS0YCH4L1J	CC	33 PF 50V CH
C2608	72531753	E02LU2470M	CE	47 UF 16V
C2609	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2610	AE001277	CS0YB04U3K	CC	0.0068UF 50V B
C2611	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2612	AE000835	CS0PB03L4K	CC	0.033 UF 25V B
C2613	79091243	CS0YCH4H2J	CC	220 PF 50V CH
C2614	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2615	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2616	79091306	CS0YCH4Q2J	CC	470 PF 50V CH
C2617	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2618	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2619	79091499	CS0YCH4S2J	CC	560 PF 50V CH
C2620	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2621	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2622	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2623	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2624	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2625	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2626	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2627	AE000835	CS0PB03L4K	CC	0.033 UF 25V B
C2628	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2629	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2632	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2633	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2634	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2635	79091234	CS0YB0413K	CC	0.001 UF 50V B
C2636	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2637	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2638	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2639	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2640	79091094	E02LU0101M	CE	100 UF 6.3V
C2641	79091094	E02LU0101M	CE	100 UF 6.3V
C2642	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2643	72531753	E02LU2470M	CE	47 UF 16V
C2644	72531753	E02LU2470M	CE	47 UF 16V
C2645	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2646	72531753	E02LU2470M	CE	47 UF 16V
C2647	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C2648	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C2649	79091233	CS0YB0215K	CC	0.1 UF 16V B
C2654	79091235	CS0YB0414K	CC	0.01 UF 50V B
C2655	79091235	CS0YB0414K	CC	0.01 UF 50V B
C2657	79091057	CS0PCH412J	CC	100 PF 50V CH
C2658	79091057	CS0PCH412J	CC	100 PF 50V CH
C2659	79091057	CS0PCH412J	CC	100 PF 50V CH
C2660	79091057	CS0PCH412J	CC	100 PF 50V CH
C3001	72001165	CS0RB0216K	CC	1 UF 16V B
C3002	79091235	CS0YB0414K	CC	0.01 UF 50V B
C3004	79091238	CS0YB04H4K	CC	0.022 UF 50V B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C3005	79091234	CS0YB0413K	CC	0.001 UF 50V B
C3006	79091234	CS0YB0413K	CC	0.001 UF 50V B
C3007	79091233	CS0YB0215K	CC	0.1 UF 16V B
C3008	79091056	CS0PB04Q3K	CC	0.0047UF 50V B
C3009	79091233	CS0YB0215K	CC	0.1 UF 16V B
C3010	79091234	CS0YB0413K	CC	0.001 UF 50V B
C3013	72001221	E50HU0220M	CE	22 UF 6.3V
C3014	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C3015	79091385	CS0PCH4W2J	CC	820 PF 50V CH
C3016	72001223	E50HU0470M	CE	47 UF 6.3V
C3017	79091234	CS0YB0413K	CC	0.001 UF 50V B
C3018	79091060	CS0PCH4E2J	CC	150 PF 50V CH
C3019	79091233	CS0YB0215K	CC	0.1 UF 16V B
C3020	79091238	CS0YB04H4K	CC	0.022 UF 50V B
C3021	72531763	E50HU2100M	CE	10 UF 16V
C3022	79091306	CS0YCH4Q2J	CC	470 PF 50V CH
C3023	72531751	E02LU0471M	CE	470 UF 6.3V
C3024	79091495	CS0YCH4E1J	CC	15 PF 50V CH
C3025	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C3027	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C3029	72001223	E50HU0470M	CE	47 UF 6.3V
C3030	79091503	CS0YF0N16Z	CC	1 UF 10V F
C3031	79091491	CS0YB04E3K	CC	0.0015UF 50V B
C3032	72531767	E50HU52R2M	CE	2.2 UF 50V
C3033	72001211	E02LT4331M	CE	330 UF 35V
C3034	79091503	CS0YF0N16Z	CC	1 UF 10V F
C3036	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C3038	79091503	CS0YF0N16Z	CC	1 UF 10V F
C3040	79091503	CS0YF0N16Z	CC	1 UF 10V F
C3041	79091491	CS0YB04E3K	CC	0.0015UF 50V B
C3044	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C3045	79091098	E50HU5R47M	CE	0.47 UF 50V
C3049	79091057	CS0PCH412J	CC	100 PF 50V CH
C3050	79091235	CS0YB0414K	CC	0.01 UF 50V B
C3052	72001221	E50HU0220M	CE	22 UF 6.3V
C3053	79091233	CS0YB0215K	CC	0.1 UF 16V B
C3061	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C3065	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4001	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4002	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4003	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4004	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4005	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4006	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4007	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4008	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4009	79091094	E02LU0101M	CE	100 UF 6.3V
C4010	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4011	79091094	E02LU0101M	CE	100 UF 6.3V
C4012	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4013	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4014	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4015	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4016	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4017	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4018	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4019	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4020	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4021	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4022	79091062	CS0PCH4H1J	CC	22 PF 50V CH
C4023	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4024	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4025	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4026	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4027	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4028	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4029	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4030	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4031	79091235	CS0YB0414K	CC	0.01 UF 50V B
C4032	79091053	CS0PB0413K	CC	0.001 UF 50V B
C4033	79091072	CS0PF0315Z	CC	0.1 UF 25V F

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C4035	79091303	CS0YCH4H1J	CC	22 PF 50V CH
C4036	79091052	CS0PB0215K	CC	0.1 UF 16V B
C4037	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4038	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4039	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4040	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4041	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4044	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4045	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4046	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4047	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4050	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4051	72531751	E02LU0471M	CE	470 UF 6.3V
C4062	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4063	79091094	E02LU0101M	CE	100 UF 6.3V
C4064	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C4065	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4066	AE000838	CS0PB0N16K	CC	1 UF 10V B
C4067	72531753	E02LU2470M	CE	47 UF 16V
C4068	72531753	E02LU2470M	CE	47 UF 16V
C4069	72531753	E02LU2470M	CE	47 UF 16V
C4070	72531753	E02LU2470M	CE	47 UF 16V
C4071	72531753	E02LU2470M	CE	47 UF 16V
C4072	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4073	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4074	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4075	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4076	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4077	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4078	72531753	E02LU2470M	CE	47 UF 16V
C4079	79091240	CS0YCH412J	CC	100 PF 50V CH
C4080	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4081	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4082	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C4083	72531753	E02LU2470M	CE	47 UF 16V
C4084	72531753	E02LU2470M	CE	47 UF 16V
C4085	79091234	CS0YB0413K	CC	0.001 UF 50V B
C4086	79091234	CS0YB0413K	CC	0.001 UF 50V B
C4087	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4088	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4089	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4090	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4091	79091057	CS0PCH412J	CC	100 PF 50V CH
C4092	79091057	CS0PCH412J	CC	100 PF 50V CH
C4093	79091240	CS0YCH412J	CC	100 PF 50V CH
C4094	79091240	CS0YCH412J	CC	100 PF 50V CH
C4095	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4096	79091053	CS0PB0413K	CC	0.001 UF 50V B
C4097	79091054	CS0PB0414K	CC	0.01 UF 50V B
C4098	79091239	CS0YCH411D	CC	10 PF 50V CH
C7301	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C7302	72001216	E02LU2101M	CE	100 UF 16V
C7303	BZ110205	E02LU5220M	CE	22 UF 50V
C7304	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C7305	79091501	CS0YCH4W2J	CC	820 PF 50V CH
C7306	79091501	CS0YCH4W2J	CC	820 PF 50V CH
C7308	AD301729	E02LU52R2M	CE	2.2 UF 50V
C7310	AD301729	E02LU52R2M	CE	2.2 UF 50V
C7311	72531757	E02LU5100M	CE	10 UF 50V
C8003	72531757	E02LU5100M	CE	10 UF 50V
C8013	72531757	E02LU5100M	CE	10 UF 50V
C8014	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8015	72531751	E02LU0471M	CE	470 UF 6.3V
C8031	72001227	E50HU54R7M	CE	4.7 UF 50V
C8032	79091092	E00NU24R7M	CE	4.7 UF 16 V
C8040	72001227	E50HU54R7M	CE	4.7 UF 50V
C8042	72531763	E50HU2100M	CE	10 UF 16V
C8053	72531763	E50HU2100M	CE	10 UF 16V
C8057	79091246	CS0YF0315Z	CC	0.1 UF 25V F
C8059	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8075	72001227	E50HU54R7M	CE	4.7 UF 50V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C8101	79091508	E02LU5330M	CE	33 UF 50V
C8102	79091240	CS0YCH412J	CC	100 PF 50V CH
C8105	79091491	CS0YB04E3K	CC	0.0015UF 50V B
C8106	79091491	CS0YB04E3K	CC	0.0015UF 50V B
C8107	79091057	CS0PCH412J	CC	100 PF 50V CH
C8110	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C8111	72001216	E02LU2101M	CE	100 UF 16V
C8112	BZ110205	E02LU5220M	CE	22 UF 50V
C8113	BZ110205	E02LU5220M	CE	22 UF 50V
C8114	AD301729	E02LU52R2M	CE	2.2 UF 50V
C8115	79099014	E02LU54R7M	CE	4.7 UF 50V
C8118	AD301729	E02LU52R2M	CE	2.2 UF 50V
C8119	72001214	E02LU0221M	CE	220 UF 6.3V
C8120	79091243	CS0YCH4H2J	CC	220 PF 50V CH
C8121	79091054	CS0PB0414K	CC	0.01 UF 50V B
C8122	72531753	E02LU2470M	CE	47 UF 16V
C8123	79091238	CS0YB04H4K	CC	0.022 UF 50V B
C8124	72531753	E02LU2470M	CE	47 UF 16V
C8125	79091072	CS0PF0315Z	CC	0.1 UF 25V F
C8126	79091052	CS0PB0215K	CC	0.1 UF 16V B
C8129	79091084	CS0RCH412J	CC	100 PF 50V CH
C8130	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8131	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8132	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8133	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8134	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C8135	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C8136	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C8137	79091494	CS0YCH4B1J	CC	12 PF 50V CH
C8138	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8139	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8140	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8141	79091242	CS0YCH4E2J	CC	150 PF 50V CH
C8142	72531737	CS0RCH411D	CC	10 PF 50V CH
C8143	72531737	CS0RCH411D	CC	10 PF 50V CH
C8144	72531751	E02LU0471M	CE	470 UF 6.3V
C8145	72531751	E02LU0471M	CE	470 UF 6.3V
C8146	72531751	E02LU0471M	CE	470 UF 6.3V
C8147	79091489	CS0RCH4L1J	CC	33 PF 50V CH
C8148	79091489	CS0RCH4L1J	CC	33 PF 50V CH
C8149	79091489	CS0RCH4L1J	CC	33 PF 50V CH
		DIODES		
⚠D502	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D503	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
D504	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D505	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D506	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D507	79097826	D23TGP15J0	DIODE,SILICON	RGP15J-G23
D509	79099017	D2WXGP10J0	DIODE,RECTIFIER	RGP10J-EIC
⚠D510	72001204	D97U02701B	DIODE,ZENER	MTZJ27B T-77
⚠D511	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
⚠D512	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
⚠D513	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC
D514	79097749	D97U01201B	DIODE,ZENER	MTZJ12B T-77
⚠D515	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
D518	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D522	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
⚠D523	79099023	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D524	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D526	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D530	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
D531	79091506	D97U09R11B	DIODE,ZENER	MTZJ9.1B T-77
D532	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D534	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D535	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D536	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D537	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D538	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D539	79099033	D1VT001330	DIODE,SILICON	1SS133T-77
D602	79091430	0021E5Q212	LED	LTL-1CHGT-002A

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
			DIODES		
D656	79099025	D2WXN40050	DIODE,SILICON	1N4005-EIC	
D685	79091430	0021E5Q212	LED	LTL-1CHGT-002A	
D701	79099033	D1VT001330	DIODE,SILICON	1SS133T-77	
D702	79097832	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77	
D2601	79097834	DDARDS1200	DIODE,SILICON	KDS120RTK	
D3001	AD301638	0010E00330	INFRARED LED	LTE-3271T-012A-O	
D3007	79099033	D1VT001330	DIODE,SILICON	1SS133T-77	
D3009	79099033	D1VT001330	DIODE,SILICON	1SS133T-77	
D8001	79097754	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77	
D8003	79097754	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77	
D8008	79099033	D1VT001330	DIODE,SILICON	1SS133T-77	
D8101	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8102	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8103	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8106	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8107	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8108	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8109	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8110	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8111	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8112	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
D8113	79097836	DDDRL41480	DIODE,SILICON	MCL4148	
			ICS		
IC101	AD301643	I03F3206M0	IC	LA71206M-MPB	
⚠IC501	79099036	I1KJ9A4310	IC	KIA431	
⚠IC502	BZ611089	I1KA98R09A	IC	KIA78R09API	
⚠IC503	AD301771	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)	
IC701	79099040	I01F63FBP0	IC	AN3663FBP	
IC2301	79097837	I03F065600	IC	LA6560	
IC2601	AE000841	ICQK067070	IC	ZR36707TQC	
IC2602	79097840	I07E00358F	IC	BA10358F-E2	
IC3001	AE001254	I54F50138A	IC	OEC0138A	
IC3003	79099051	I9UF032310	IC	PST3231NR	
IC3099	AE001256	A2C516X015	IC	S-24C04BFJ-TB	
IC4001	AE000842	ICQK067620	IC	ZR36762	
IC4002	79097848	I5HJ004BF0	IC	S-24C04BFJ-TB	
IC4003	79097843	I0GF9XZ010	IC	PQ070XZ01ZP	
IC4005	AE000843	IF9J0164A7	IC	M12L64164A-7T	or
	AE001560	IF9J0164A6	IC	M12L64164A-6T	
IC4007	79097850	ICMJ0800A7	IC	SST39VF800A-70-4C-EK	
IC7301	79097844	I17F0742K0	IC	PCM1742KE/2K	
IC8002	AD301988	I0UF015010	IC	MM1501XNRE	
IC8005	AD301988	I0UF015010	IC	MM1501XNRE	
IC8101	79099059	I0QF045800	IC	NJM4580M	or
	AE001295	I0QJ045800	IC	NJM4580M(TE1)	
			TRANSISTORS		
Q101	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q102	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q103	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	or
	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK	
Q104	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
Q105	79099066	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)	
Q106	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q107	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q109	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q301	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
⚠Q501	79099070	TJXG5NC500	FET	STP5NC50FP	
⚠Q502	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
⚠Q503	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
⚠Q504	79099087	TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT	
⚠Q505	79099073	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
Q506	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q507	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q508	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q509	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
⚠Q510	79099065	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
⚠Q511	79097791	TAAT01241Y	TRANSISTOR,SILICON	KTA1241_Y-AT	
Q513	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S	
Q514	79099068	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
		TRANSISTORS			
Q530	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q531	79099067	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S	
Q651	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q652	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q653	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q654	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q655	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q656	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q657	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q658	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q659	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q660	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q661	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q662	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q663	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q664	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q665	79099098	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q666	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	or
	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK	
Q2601	79097868	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146	
Q2602	79097868	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146	
Q2603	79097867	T27T030180	FET	2SK3018	
Q2604	79097867	T27T030180	FET	2SK3018	
Q2605	79097867	T27T030180	FET	2SK3018	
Q3001	79099093	0002700690	PHOTO COUPLER	RPI-303	
Q3002	79099093	0002700690	PHOTO COUPLER	RPI-303	
Q3003	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	or
	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK	
Q3004	79099094	0002700680	PHOTO COUPLER	RPI-352C40N	
Q3005	79099094	0002700680	PHOTO COUPLER	RPI-352C40N	
Q3006	79097377	0000M00390	PHOTO TRANSISTOR	ST-304L	
Q3007	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q3008	79097377	0000M00390	PHOTO TRANSISTOR	ST-304L	
Q8003	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	or
	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q8004	79099066	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)	
Q8005	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q8006	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q8007	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	or
	79099064	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK	
Q8101	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q8102	79099069	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q8103	79099097	TPAAA05001	COMPOUND TRANSISTOR	KRA101SRTK	
Q8104	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q8105	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q8106	79099096	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK	
Q8107	79099099	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
		COILS &TRANSFORMERS			
L101	72001083	031626009R	COIL,BIAS OSC	1626009	
L102	BZ310041	02167F101J	COIL	100 UH	
L103	AE001238	0216A65R6K	COIL	5.6 UH	
L105	BZ310041	02167F101J	COIL	100 UH	
L106	BZ310039	02167F220J	COIL	22 UH	
L107	BZ310039	02167F220J	COIL	22 UH	
L301	BZ310039	02167F220J	COIL	22 UH	
⚠L501	79091434	029T000107	COIL,LINE FILTER	0R4A223F20	
L502	AD301539	02AHB0A0A4	CORE,FERRITE	W5T_20*10*10A	
L505	BZ310039	02167F220J	COIL	22 UH	
⚠L506	79099101	02167E220K	COIL	22 UH	or
	BZ310091	021W7A220K	COIL	22 UH	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
		COILS &TRANSFORMERS			
L701	BZ310039	02167F220J	COIL	22 UH	
L702	BZ310039	02167F220J	COIL	22 UH	
L703	BZ310041	02167F101J	COIL	100 UH	
L704	AE000014	0216A6100K	COIL	10 UH	
L3002	79099101	02167E220K	COIL	22 UH	or
	BZ310091	021W7A220K	COIL	22 UH	
L3003	AD301705	0216A6120K	COIL	12 UH	
L4001	BZ310191	02167F2R2J	COIL	2.2 UH	
L8004	BZ310007	0216A6470K	COIL	47 UH	
L8008	BZ310007	0216A6470K	COIL	47 UH	
L8101	AE000828	02167F1R0K	COIL	1 UH	
L8102	AE000828	02167F1R0K	COIL	1 UH	
L8103	AE000828	02167F1R0K	COIL	1 UH	
L8104	AE000828	02167F1R0K	COIL	1 UH	
L8105	79091363	02167FR33K	COIL	0.33 UH	
L8106	79091363	02167FR33K	COIL	0.33 UH	
⚠T501	79091435	0481260074	TRANSFORMER,SWITCHING	81260074	
		JACKS			
J601	79099103	060Q401086	RCA JACK	AV1-06DG-1	
J602	79099103	060Q401086	RCA JACK	AV1-06DG-1	
J603	79099104	060Q421024	RCA JACK	AV1-06DSG-1	
J8001	79099105	060J411018	RCA JACK	MSP-213V1-432 PBSN	
J8002	AD301038	060J431019	RCA JACK	MSP-213V2-432 PBSN	
J8101	79091437	060J411029	RCA JACK	MSP-213V1-732_PBSN	
J8102	79099107	063D700005	JACK	MDC-070V	
J8103	AD301037	060J411024	RCA JACK	MSP-213V1-652 PBSN	
		SWITCHES			
SW601	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW602	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW603	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW604	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW605	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW685	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW686	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW687	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW689	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW690	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW691	79091436	0504R01T38	SWITCH TACT	EVQ11L05R	
SW3001	79097386	0508S11001	SWITCH (LEAF)	LSA-1144EAU	
SW8101	AD301546	0510Y24001	SWITCH SLIDE	SK42H0IG9A	
		P.C.BOARD ASSEMBLIES			
PCB010	AE001257	A2C516X010	PCB ASS'Y	VMC300A	
PCB130	AE001258	A2C516X130	PCB ASS'Y	VMC298A	
PCB270	AE001259	A2C516X270	PCB ASS'Y	VEBA14A	
PCB280	AE001260	A2C516X280	PCB ASS'Y	VEBA15A	
		MISCELLANEOUS			
B501	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2	
B502	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0	
B2601	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B2602	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B2603	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B2604	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B2605	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4004	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4005	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4006	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4007	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B4008	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B7301	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B7302	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B8101	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B8102	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
B8103	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04	
BT601	79091206	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G	
CD102	79091447	122H061504	CORD,JUMPER	2H061504	
⚠CD501	AE001245	1209419910	CORD,AC BUSH	9419910	
CD601	AE001247	122W0C1004	CORD,JUMPER	2W0C1004	or
	79091449	122H0C1003	CORD,JUMPER	2H0C1003	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description		
		MISCELLANEOUS			
CD681	79091446	122H051503	CORD,JUMPER	2H051503	
CP101	79099125	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1	
CP102	AE001239	069J760599	CONNECTOR PCB SIDE	IMSA-9604S-06C	
CP103	AD301649	067U002019	WIRE HOLDER	B2013H02-2P	
CP501	AE001242	06CH2C0302	CORD,CONNECTOR	CH2C0302	
CP601	79091439	069EVC3020	CONNECTOR PCB SIDE	00_6232_012_102_800	
CP651	79091440	069J750019	CONNECTOR PCB SIDE	IMSA-9604S-05Z13	
CP652	AE001241	069WVC001A	CONNECTOR PCB SIDE	TOC-G12X-A1	
CP681	79091440	069J750019	CONNECTOR PCB SIDE	IMSA-9604S-05Z13	
CD6002	AE001243	06CPL02006	CABLE	CPL02006	
CD6003	79091290	06CPBA2003	CORD,RCA PIN	TD-020301-3	
CD8002	AE001246	122F080601	CORD,JUMPER	2F080601	
CP2601	79097872	069GYOT079	CONNECTOR PCB SIDE	09-5000-024-001-006	
CP2602	AD301555	069EV83010	CONNECTOR PCB SIDE	00_6232_008_006_800	
CP2603	BZ614350	069S230629	CONNECTOR PCB SIDE	A2001WV2-3P	
CP3001	79099011	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2	
CP4002	AD301554	069S2C0629	CONNECTOR PCB SIDE	A2001WV2-12P	
CP8002	AE001240	069J780599	CONNECTOR PCB SIDE	IMSA-9604S-08C	
CP8102	AE001240	069J780599	CONNECTOR PCB SIDE	IMSA-9604S-08C	
⚠F501	79091443	081PC2R505	FUSE	51MS025L	
FH501	72561289	06710T0006	HOLDER,FUSE	EYF-52BC	
FH502	72561289	06710T0006	HOLDER,FUSE	EYF-52BC	
OS601	79099149	077Q037002	REMOTE RECEIVER	PIC-37143TH5	
OS8101	AE000830	07AQ000009	OPTICAL DEVICE	OFTG038101	or
	79091410	07A9000006	OPTICAL DEVICE	GP1FA553TZ	
TM601	AE001244	076D0HL020	TRANSMITTER	ORV202N18040	
⚠TU301	AE001237	0162300038	RF UNIT	115-V-H015ARE	
V651	AE001236	0040F34002	LED DISPLAY	ELF-4M6SDRSOWB/S428	
X101	79091293	100DT3R528	CRYSTAL	HC-49/U	
X3001	79091444	100BT01004	CRYSTAL	HC-49U/S	
X4001	79097876	100BT02701	CRYSTAL	HC-49U/S	

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN